



Project Resourcing and Schedule Management

(State of California Information Technology Project 2660-160)

Value Analysis Report

July 2, 2004



California Department of Transportation
Division of Project Management
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Introduction

What is PRSM?

PRSM is an acronym for “Project Resourcing and Schedule Management.” It is intended to address five problems:

1. The Department of Transportation (Caltrans) cannot fully meet the reporting requirements as mandated by the Legislature and the California Transportation Commission.
2. Substantial time and effort is required to develop resource-driven schedules.
3. Project and functional managers are unable to status projects on a timely basis, in a statewide database.
4. Caltrans does not have the ability to perform critical path scheduling and assign individuals accordingly.
5. Caltrans lacks the ability to identify skilled individuals and resource them to specific tasks.

PRSM will be a Commercial-Off-the-Shelf (COTS) system. Its exact functionality will depend on what is available on the market.

PRSM Requirements

- The PRSM Feasibility Study Report (FSR) lists five problems, repeated above (“What is PRSM?”).
- The five problems are further broken down to ten objectives.
- The objectives are then broken down into forty-six “functional requirements.”

The problems, objectives, and functional requirements appear in Attachment A.

For the PRSM procurement, it is necessary to break down the functional requirements yet further into “business requirements.” These are *specific, measurable*, outcomes needed by the customers. An example of such a breakdown is shown in Table 1.

Functional Requirement 1:

Comparison of planned to actual costs.

Business Requirement 1:

(*Specific, measurable* explanation of Functional Requirement 1.)

The proposed COTS based system is expected to create “SB45” reports for each project in the State Transportation Improvement Program (STIP). These reports are used to facilitate project communications between the State and its customers (the Regional Transportation Planning Agencies, Metropolitan Planning Organizations, and various county and city agencies).

The following data fields are needed for this report:

- BASELINE AMOUNT: PERMITS AND ENVIRONMENTAL STUDIES SUPPORT
- BASELINE AMOUNT: PLANS, SPECIFICATIONS, AND ESTIMATES SUPPORT
- BASELINE AMOUNT: RIGHT OF WAY SUPPORT
- BASELINE AMOUNT: CONSTRUCTION SUPPORT

- FUTURE ESTIMATED: AMOUNT PERMITS AND ENVIRONMENTAL STUDIES SUPPORT
- FUTURE ESTIMATED: AMOUNT PLANS, SPECIFICATIONS, AND ESTIMATES SUPPORT
- FUTURE ESTIMATED AMOUNT: RIGHT OF WAY SUPPORT
- FUTURE ESTIMATED AMOUNT: CONSTRUCTION SUPPORT

- EXPENDITURES TO DATE: PERMITS AND ENVIRONMENTAL STUDIES SUPPORT
- EXPENDITURES TO DATE: PLANS, SPECIFICATIONS, AND ESTIMATES SUPPORT
- EXPENDITURES TO DATE: RIGHT OF WAY SUPPORT
- EXPENDITURES TO DATE: CONSTRUCTION SUPPORT

Background to this Report

This report responds to a letter from the Department of Finance (Finance) dated March 17, 2004 giving approval for Caltrans to carry out an eight-step value analysis for PRSM. The letter is Attachment B of this report.

The value analysis is the latest stage in a project that began in 1999. Here is a brief project history:

March 1999: Caltrans submits a Feasibility Study Report (FSR) for the Project Cost and Schedule Management System (PCSM – Project 2660-157). Total project cost \$23.5 million. The proposed system includes off-the-shelf and custom-developed software comprising four Project Management components:

- Infrastructure (data warehouse)
- Scheduling improvement (to replace the existing system)
- “Bridge” to the Transportation Operations and Project Support System (TOPSS) (Caltrans’ Human Resources system)
- Progress Reporting Component

December 1999: Finance sends a disapproval letter for PCSM with instructions to reduce scope and submit a revised FSR that includes just the project-scheduling component.

April 2000: Caltrans submits a reduced scope PRSM FSR and Finance approves it June 2000. Total project cost \$13.4 million.

June 2000: Caltrans initiates vendor solicitation.

May 2002: Caltrans submits a Special Project Report (SPR) reflecting increased cost and scope. Total project cost \$26.1 million. Some of the increased costs are attributed to a lack of competition (there was only one finalist vendor), increased vendor rates, increased COTS software cost, a requirement for new hardware, and a longer term required for development.

February 21, 2003: Finance sends a letter discontinuing review of the SPR. Finance requires Caltrans to perform a requirements value analysis and market analysis and produce an updated SPR. Caltrans is instructed to submit a work plan for this effort to Finance, including a detailed task schedule and any additional costs required for these activities, before expending additional resources on the PRSM project.

July 1, 2003: Finance sends a letter instructing Caltrans to cease all project activities until it complies with the requirements of the February 2003 letter.

July 31, 2003: Caltrans submits a work plan to perform the requirements value analysis and the market analysis.

August 2003: Finance directs Caltrans to modify its work plan to add details and clarifications necessary to understand the plan.

November 5, 2003: Caltrans submits a revised work plan.

March 17, 2004: Finance gives approval for Caltrans to carry out an eight-step “Value Analysis” (Attachment B).

Value Analysis

STEP 1: Establish a cross-functional Evaluation Team consisting of key business personnel from Headquarters and the Districts.

The PRSM Steering Committee invited all Districts and Headquarters Divisions to nominate members to the Evaluation Team. The Steering Committee set a goal of appointing a representative team of people who are knowledgeable about the need for project management software, with a particular emphasis on project cost and schedule management, matching planned costs to actual costs, the 20 percent factor in SB45 of 1997, and meeting the cost reporting needs of local project sponsors. If possible, the team should include a balance of functional specialties; northern and southern Districts; large and small Districts; regional, stand-alone and tailored Districts; Headquarters, Districts, Information Technology and Engineering Services.

Eighteen nominations were received. On February 20, 2004, Steering Committee appointed the following twelve people to the Evaluation Team:

District or Division	First Name	Last Name	Function	Civil Service Classification
HQ Project Management	Nigel	Blampied	PRSM Project Manager	Supervising Transport. Engineer
North Region: District 03 Marysville	Brent	Green	Right of Way	Senior Right of Way Agent
District 04 Oakland	Muhammad	Din	District Project Management Support	Senior Transportation Engineer
Central Region: District 06 Fresno	Christine	Cox	Environmental Analysis	Senior Environ. Planner
Central Region: District 09 Bishop	Brad	Mettam	Highway Project Manager	Senior Transportation Planner
District 07 Los Angeles	Mark	Archuleta	Construction	Supervising Transportation Engineer
District 08 San Bernardino	Jamal	Elsaleh	Highway Project Manager	Senior Transportation Engineer
District 11 San Diego	Shahin	Sepassi	Traffic Operations	Senior Transportation Engineer
District 12 Orange County	Son	Nguyen	Design	Senior Transportation Engineer
Engineering Services	Alan	Anderson	Engr. Svcs. Project Management Support	Senior Architect

District or Division	First Name	Last Name	Function	Civil Service Classification
HQ Information Technology	Bill	Naddy	Operating Systems	Data Processing Manager
HQ Project Management	Guy	Paulsell	Workload & Data Management	Senior Transportation Engineer

STEP 2: Hire an Independent Project Oversight Consultant (IPOC) to monitor and ensure a sound and objective Value Analysis process.

Caltrans considered the possibility of hiring an engineering firm with expertise in value analysis, capital project management, the Caltrans business processes and information technology projects to serve as the IPOC. Caltrans had two such firms immediately available through “on call” engineering contracts, one for project management and the other for value analysis. This was discussed with the Department of Finance Technology Oversight Unit (DOF-TOSU), who expressed concerns about using utilizing such a contract unless the Department of General Services had approved it specifically for information technology project oversight.

To satisfy the DOF-TOSU concerns, Caltrans proceeded with a contract through the Department of General Services Master Services contract. Four firms’ submitted proposals, none of who had any experience in value analysis, capital project management or the Caltrans business processes. A selection panel from outside the PRSM project evaluated the four proposals and selected Venturi Technology Partners as the PRSM IPOC. Venturi will serve as PRSM IPOC until the Market Analysis Report is submitted to Finance or until December 31, 2004, whichever is earlier. Another contract will be written for IPOC services for the remainder of PRSM.

The contract with Venturi Technology Partners was executed on April 23, 2004.

STEP 3: Review the objectives and functional requirements listed in the FSR in the light of any subsequent changes to the Department’s business processes since the FSR was published.

The Evaluation Team, assisted by the PRSM Project Management Team, brainstormed a list of twenty-seven changes to the Caltrans project delivery business processes since the FSR was published (April 2000). Here is the list:

1. Local Capital Outlay
2. TOPPS/Timekeeping (Staff Central)
3. Increased contracting out of architectural and engineering work
4. Domino Doc
5. Understanding of the SB45 reporting requirements

6. Provide up to date project schedule data
7. Allow functional managers to update workplans directly
8. XPM is more stable
9. Other possible links to the PRSM system
10. Financial Systems Integration Study
11. Information Technology consolidation
12. CT Pass(word)
13. ODBC reporting tools
14. Risk Management Policy
15. Some Districts are solving status problems
16. More information on Web
17. Environment business process review
18. More recording at lower level of WBS.
19. Weekly updating
20. Increasing complexity of project and contract financial management
21. More reporting on metrics
22. Design sequencing
23. A + B contracts
24. Change control process
25. Problem when state highway projects include IT.
26. No DOIT (Department of Information Technology)
27. Changing process for contracting out

Each brainstormed item was investigated. Only four of them were determined to require modifications to the PRSM objectives and functional requirements. These were Items 1, 2, 3 and 15. They are discussed in the description of Step 4. Detailed documentation of the remaining items is available on request. On investigation, it was found that some of them had not changed the Caltrans business processes and others had occurred before the publication of the PRSM FSR.

STEP 4: Modify any objectives and functional requirements as required by the Department's current business processes and fully document the business justification for any such changes.

Four of the twenty-seven items brainstormed in Step 3 were determined to require changes to PRSM objectives or functional requirements. These four items are:

- Item 1: Local Capital Outlay.
- Item 2: Replacement of the Caltrans-developed mainframe Time Reporting System (TRS) and Labor Distribution System (LDS) with browser-based input into a new Staff Central personnel system, which used PeopleSoft COTS software.
- Item 3: Contracting Out of Architectural and Engineering (A&E) services.

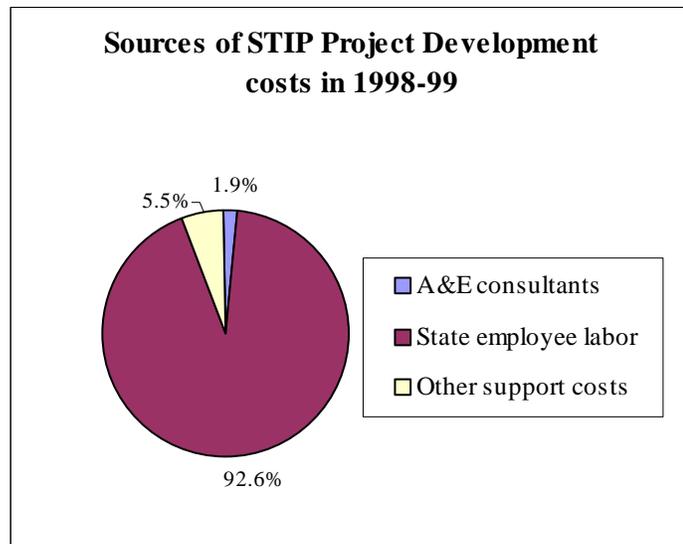
- Item 15: Some Districts are solving status problems.

Proposition 35

Items 1 and 3 both stem from Proposition 35, an initiative constitutional amendment and statute approved by the voters in November 2000.

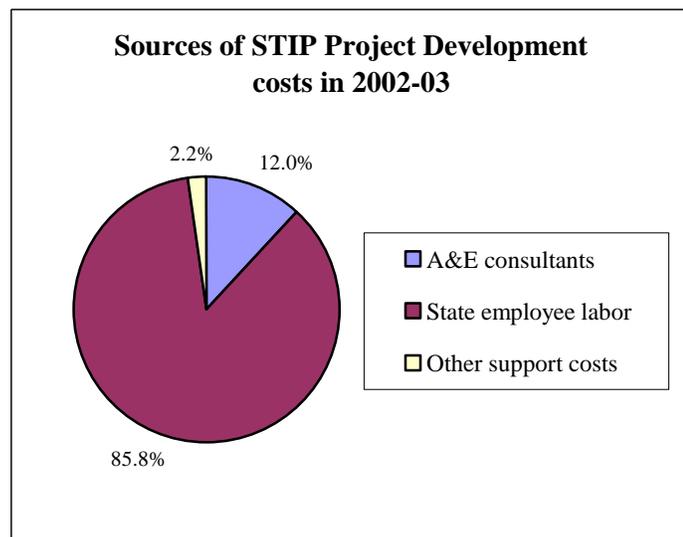
Item 1 results from Government Code 4529.11¹, the *statute* in Proposition 35. This code gives local agencies “the choice and the authority to contract” out certain projects in the State Transportation Improvement Program (STIP). By April 2004, Local Agencies had exercised this right on 34 STIP project components on State Highways.² Caltrans managed, delivered, and reported progress on the remaining 1,320 STIP project components on State Highways.

Local agencies exercise their rights under Government Code 4529.11 by asking the California Transportation Commission to list them as “Implementing Agency” for particular STIP project components. When this happens, the component is budgeted as “Local Capital Outlay.”³ If local agencies do not assume this role, Government Code 14520.3 (b) and (c)⁴ designates Caltrans as the “Implementing Agency” on all State Highway project components in the STIP.



Government Code 4529.11 takes precedence over Government Code 14520.3 (b) and (c), because it is a later statute and because it was passed by the voters.

Item 3 results from Article XXII of the State Constitution⁵, the *constitutional amendment* in Proposition 35. Before November 2000, Caltrans used its own employees to perform virtually all the engineering work on State Highway STIP projects. Under California Supreme Court decision S042591, of May 15, 1997, Caltrans



could contract out engineering work only under very narrow circumstances. Each contract had to be justified under Government Code 19130 (b).⁶ In Fiscal Year 1998-1999, the most recent completed year before the PRSM FSR was written, contracting to Architectural and Engineering (A&E) consultants accounted for 1.9 percent of the STIP State Highway project development costs.

Under Article XXII, Caltrans now uses both its own employees and private consultants to perform the engineering work on State Highway STIP projects. Contracting out is limited only by the availability of funds in the Caltrans budget. In Fiscal Year 2002-2003, the most recent completed year, contracting to A&E consultants accounted for 12.0 percent of the STIP State Highway project development costs.

The effect of changes 1 and 3 is to add the underlined phrases to PRSM Objective 1 and delete the letter in ~~strikeout~~:

Meet the reporting requirements of SB 45 for 100% of the State employee labor costs on STIP State Highway projects components where the Department is Implementing Agency.

“State employee labor” is added to address the fact that the PRSM FSR does not address the recording of contracted-out labor. “Components where the Department is Implementing Agency” is added to address the fact that 34 of the 1,354 STIP project components are no longer under Caltrans control.

Despite the change, PRSM continues to have enormous value. The State employee labor costs that it would have reported for PRSM Objective 1 in 2002-2003 amounted to \$193 Million. This is the loaded cost of state employee labor for project development on State Highway STIP projects.

The total State employee labor costs that would have been managed through PRSM in 2002-2003, amounted to \$965 Million. The difference between the \$193 Million and \$965 Million accounts for State employee labor on:

1. The Right of Way and Construction components of STIP projects, and
2. Other State Highway programs such as the State Highway Operation and Protection Program (SHOPP), Toll Bridge Seismic Retrofit.

The collection and reporting of actual consultant labor costs is not included in the PRSM scope in the FSR. At the time that the FSR was written, consultant costs were an insignificant part of the project costs, and the use of consultants was severely restricted by the Supreme Court ruling. Adding consultant labor control to the PRSM scope would be a significant scope increase. Nevertheless, the increase in consultant usage will need to be addressed at some time. As PRSM will be a COTS system, the software will presumably be designed to meet the general needs of

private firms that deliver projects. These firms need to manage their consultants. It is therefore reasonable to expect that the PRSM COTS will have a latent ability to collect and report actual consultant costs. Once the PRSM COTS product is selected, it would be wise to investigate how that latent ability might be used. This would best be done concurrently with the implementation of PRSM, when the COTS is known.

Staff Central

Item 2 of the brainstormed list refers to this change. The PRSM FSR makes several references to the Caltrans mainframe Time Reporting System (TRS). Caltrans staff built TRS in 1994 using IBM's REXX character based programming language.

Staff entered time in TRS. This was then submitted in a batch process to the mainframe Labor Distribution System (LDS), which priced the submitted hours and forwarded both hours and labor dollar costs to the mainframe Transportation Reporting Accounting Management System (TRAMS).

In December 2002, Caltrans replaced TRS with Staff Central, a new personnel system that uses PeopleSoft COTS software. This new system replaces both TRS and LDS.

With the availability of an improved timekeeping and labor system, the Evaluation Team proposes to add a time component to Functional Requirement 32 by adding the underlined text:

Utilize approved time sheet data to automatically update project plans each week, within one day after the required approval date.

The Evaluation Team struggled with the issue of whether its mandate would allow it to recommend that PRSM should not introduce a new timesheet. This sounded like a technical requirement, when the team's mandate focuses on business requirements. Nevertheless, the team was unanimous that it would be better to modify the Staff Central timekeeping system than to introduce a new system.

- A new system would be confusing and objectionable to employees, who have only recently had to learn to use the Staff Central system.
- A new system would have to re-build all the personnel functions that have already been built into Staff Central. These include the ability to handle alternative work schedules, recording of overtime, compliance with bargaining agreements, maintenance of leave balances, etc. They are not essential to PRSM, but they are essential for a timekeeping system.
- A new system might be adopted only by portions of the Department, requiring that some employees enter time into two separate systems.

The Evaluation Team recommends PRSM should not introduce a new timesheet, but should rather modify the Staff Central timekeeping system. This would require that Functional Requirement 33 be modified as follows:

~~Capture~~ Import timesheet information for more than 12,000 COS employees.

Under Problem IV, Objective 7:

~~FR 27: Support the collection and reporting of timecard information for each scheduled resource~~ *Check whether projects and WBS elements are open and available for charging before accepting those charges.*

Continued Development of Shadow Systems

Item 15 of the brainstormed list refers to this change.

The PRSM FSR says:

“Since XPM does not adequately portray true resource needs, the Project Management Support Units in each District spend considerable time using other shadow systems, such as Excel, Access, or FoxPro to adjust resource schedules. This takes staff time to re-enter data, analyze the information, and level the resources. This lack of real-time information limits the project managers’ ability to actively manage projects or take corrective actions if projects are falling behind budget or schedule.”

In the four years since the FSR was written, Districts have of necessity continued to develop these systems. Some shadow systems have become sophisticated reporting tools, although none provides all the features that are required for PRSM

In some of the shadow systems, status date changes are either instantaneous or updated overnight, expenditure data is imported on a weekly basis, either from Staff Central, the Labor Distribution System, or TRAMS (before reconciliation).

The shadow systems have become the foundation for many District business processes, performance measures, and reporting requirements.

The PRSM FSR said that PRSM would replace the shadow systems, but it is now no longer feasible to replace all the District-specific and custom reports that exist in the shadow systems. If Districts were to stop using the shadow systems and depend only on PRSM, they would no longer have their custom reports, and consequently experience a significant loss of information, especially when they are relating PRSM data to data that will not be in PRSM.⁷ As a result, there will probably be much interest in data sharing between the shadow systems and PRSM, to avoid re-keying data into either PRSM or the shadow systems. Data from PRSM should be made available to *ODBC*⁸ reporting tools. The Shadow systems will then report, and match, the official Departmental data from PRSM.

This recommendation would re-word Problem III, Objectives 5 and 6 and Functional Requirements 21, 23 and 25 as follows (added text underlined, deleted text in strikethrough):

Problem III: Project and Functional Managers are unable to status projects on a timely basis, in a statewide database.

Objective #5: Provide an enterprise scheduling tool to ~~eliminate~~ reduce the need to ~~update~~ for various shadow systems.

FR 23. Allow project managers to schedule tasks statewide by Work Breakdown Structure (WBS), Caltrans standardized hierarchical structure that defines work activities.

FR 25. Provide standard & ad-hoc reporting & cross-project analysis capabilities, on a statewide basis.

Objective #6: Provide project and functional managers desktop access to a statewide resource and scheduling tool to plan and status projects at WBS level 7.

FR 21: Allow project managers and functional managers to directly access and update project plan information via their desktop or laptop accessing real-time project data, in a statewide database.

SB45 Reporting Requirements

The PRSM FSR refers to SB45 of 1997,⁹ and gives this objective (as modified above):

Meet the reporting requirements of SB45 for 100% of the State employee labor costs on STIP State Highway projects components where the Department is Implementing Agency.

The FSR does not explain what the SB45 reporting requirements are. This has caused considerable confusion, including an incorrect statement in the Department of Finance letter of July 1, 2002. That letter says:

“Caltrans reported that a number of key objectives and requirements are now excluded from the project scope. These include the requested SB45 reporting requirements for the construction component of the Capital Outlay Program.”

The reporting requirements for the construction component of Capital Outlay were in law before SB45, and they have not changed for several decades. They are reported by existing systems using long-established processes.

To identify the SB45 reporting requirements, one must know what was in law before the bill was enacted. This is not apparent from a simple reading of the statute, because it does not distinguish new text from old.

In order to prevent similar misunderstandings in future, this report includes an explanation of the SB45 reporting requirements, and Objective 1, in Attachment C.

STEP 5: Assign a weighted value to each revised objective indicating the objective's relative importance.

Each Evaluation Team member independently weighted the five problem statements and ten objectives. Their scores were compiled and averaged. The team then met, and discussed the tentative minimum Functional Requirements (Step 7). As a result of this discussion, some team members chose to adjust their weights. The final average weights appear below.

Problem I Caltrans cannot fully meet the reporting requirements as mandated by the Legislature and the California Transportation Commission	18%
Problem II Substantial time and effort is required to develop resource-driven schedules	29%
Problem III Project and functional managers are unable to status projects on a timely basis, in a statewide database	19%
Problem IV Caltrans does not have the ability to perform critical path scheduling and assign individuals accordingly	19%
Problem V Caltrans lacks the ability to identify skilled individuals and resource them to specific tasks	15%
	100%

The weight of each problem was sub-divided between its two objectives as follows:

Problem I Caltrans cannot fully meet the reporting requirements as mandated by the Legislature and the California Transportation Commission	
Objective #1 Meet the reporting requirements of SB45 for 100% of the STIP projects.	34%
Objective #2 Provide project status data such as; plan vs. actual, earned value, cost performance indexing, etc. to our transportation partners on a near-time basis.	66%
	100%
Problem II Substantial time and effort is required to develop resource-driven schedules	
Objective #3 Realize efficiencies associated with entering initial workload estimates by WBS into an integrated, validating scheduling tool.	32%
Objective #4 Reduce the manual effort required to compile information for the Program Resource Management semi-annual reviews.	68%
	100%
Problem III Project and functional managers are unable to status projects on a timely basis, in a statewide database	
Objective #5 Provide an enterprise scheduling tool to reduce the need for various shadow systems.	47%
Objective #6 Provide project and functional manager desktop access to a statewide resource and scheduling tool to plan and status projects at WBS level 7.	53%

		100%
Problem IV Caltrans does not have the ability to perform critical path scheduling and assign individuals accordingly		
	<u>Objective #7</u> Provide a tool that allows project team members to continually forecast and optimally commit resources.	56%
	<u>Objective #8</u> Provide supervisors with current critical path and individual prioritized task information in order to reduce project completion times.	44%
		100%
Problem V Caltrans lacks the ability to identify skilled individuals and resource them to specific tasks		
	<u>Objective #9</u> In order to utilize fixed cost resources more effectively, ensure that the staff with the most relevant skill-set is assigned to the right task.	55%
	<u>Objective #10</u> Provide the required numbers of software licenses & system security	45%
		100%

The resultant weight for each objective, being the product of problem weights and objective splits, is thus:

<u>Objective #1</u> Meet the reporting requirements of SB45 for 100% of the STIP projects.	6.12%
<u>Objective #2</u> Provide project status data such as; plan vs. actual, earned value, cost performance indexing, etc. to our transportation partners on a near-time basis.	11.88%
<u>Objective #3</u> Realize efficiencies associated with entering initial workload estimates by WBS into an integrated, validating scheduling tool.	9.28%
<u>Objective #4</u> Reduce the manual effort required to compile information for the Program Resource Management semi-annual reviews.	19.72%
<u>Objective #5</u> Provide an enterprise scheduling tool to reduce the need for various shadow systems.	8.93%
<u>Objective #6</u> Provide project and functional manager desktop access to a statewide resource and scheduling tool to plan and status projects at WBS level 7.	10.07%
<u>Objective #7</u> Provide a tool that allows project team members to continually forecast and optimally commit resources.	10.64%
<u>Objective #8</u> Provide supervisors with current critical path and individual prioritized task information in order to reduce project completion times.	8.36%
<u>Objective #9</u> In order to utilize fixed cost resources more effectively, ensure that the staff with the most relevant skill-set is assigned to the right task.	8.25%
<u>Objective #10</u> Provide the required numbers of software licenses & system security	6.75%
	100.00%

STEP 6: Assign a weighted value to each requirement indicating the requirement's relative importance.

Using the same process as Step 5, and common forms with Step 5, the Evaluation Team established weights for each Functional Requirement and Business Requirement. The final average weights of the Functional Requirements appear below. The table below also shows which Functional Requirements were included in the "tentative minimum set". The development of the "tentative minimum set" is discussed in Step 7.

	Weight	Rank (1 = highest)	In Tentative Minimum Set?
Objective #1 Meet the reporting requirements of SB 45 for 100% of the STIP projects.			
FR 1. Comparison of planned to actual costs	6.12%	3	Yes
Objective #2 Provide project status data such as; plan vs. actual, earned value, cost performance indexing, etc. to our transportation partners on a near-time basis.			
FR 2. Comparison of planned to actual milestones completed	3.92%	7	Yes
FR 3. Calculation of earned value	2.49%	13	No
FR 4. Charts, graphs and columnar reports	2.02%	16	No
FR 5. Microsoft Excel, Microsoft Access, Crystal reports, and other ODBC compliant reporting tools	3.45%	8	Yes
Objective #3 Realize efficiencies associated with entering initial workload estimates by WBS into an integrated, validating scheduling tool.			
FR 13. Create project task resource and duration estimates using Workload Estimating Norms (WEN)	9.28%	1	No
Objective #4 Reduce the manual effort required to compile information for the Program Resource Management semi-annual reviews.			
FR 6. Allow resource allocation to projects and tasks based on actual staffing requirements rather than utilizing straight-line resource allocation	2.17%	15	Yes
FR 7. Provide resource-leveling capability across project tasks, making optimal use of available resource	1.38%	25	No
FR 8. Provide resource scheduling capability across multiple years	1.97%	17	Yes
FR 9. Provide statewide resource forecasting tools for programmed projects	0.79%	40	No
FR 10. Allow project and functional managers to assign resources by type (i.e., civil engineer, geologist, structural engineer) to projects based on availability of resources	1.58%	21	No

	Weight	Rank (1 = highest)	In Tentative Minimum Set?
FR 11. Allow Headquarters to plan capacity for the program of projects independent of task level project plans; forecasting of project costs and schedule	0.79%	40	No
FR 12. Provide a “what-if” analysis tools to improve forecasting and project scheduling	1.97%	17	Yes
FR 14. Support resource and task-driven duration calculations	1.38%	25	No
FR 15. Support fixed and variable duration tasks	1.97%	17	Yes
FR 16. Support multiple project, resource constrained scheduling	1.58%	21	No
FR 17. Provide actual effort and estimate-to-complete effort reporting information	0.99%	34	No
FR 18. Provide cost account designation for resource assignments and expenses	1.18%	27	No
FR 19. Capture calendar, contact and notes information by resource	0.79%	40	No
FR 20. Support earned value analysis and reporting	1.18%	27	No
Objective #5 Provide an enterprise scheduling tool to reduce the need for various shadow systems.			
FR 22. Allow project managers to develop an initial project plan by either: copying an existing plan and making modifications, selecting a pre-defined template, or dynamically creating a plan from a task database based on answers to posed questions	2.41%	14	No
FR 23. Allow project managers to schedule tasks statewide by Work Breakdown Structure (WBS), Caltrans standardized hierarchical structure that defines work activities	4.55%	5	Yes
FR 25. Provide standard & ad-hoc reporting & cross-project analysis capabilities, on a statewide basis	1.96%	20	No
Objective #6 Provide project and functional manager desktop access to a statewide resource and scheduling tool to plan and status projects at WBS level 7.			
FR 21. Allow project managers and functional managers to directly access and update project plan information via their desktop or laptop accessing real-time project data, in a statewide database	7.45%	2	Yes
FR 24. E-mail issues to project participants	2.62%	12	No
Objective #7 Provide a tool that allows project team members to continually forecast and optimally commit resources.			

	Weight	Rank (1 = highest)	In Tentative Minimum Set?
FR 27. Check whether projects and WBS elements are open and available for charging before accepting those charges	1.49%	23	No
FR 28. Support capture of time by individual day or by entire work period	0.74%	43	No
FR 29. Allow employees to enter all project and non-project (Jury Duty, Sick, etc) time charges	0.64%	45	No
FR 30. Provide a method for staff to directly input progress on individual work assignments	0.85%	38	No
FR 31. Support timesheet approval and return for correction with an e-mail alert	0.64%	45	No
FR 33. Capture timesheet information for more than 12,000 COS employees	1.06%	31	No
FR 34. Provide weekly employee task or "to do lists" based on project plans	0.85%	38	No
FR 35. Support the integration with the Human Resource System being implemented under TOPSS (Staff Central) (Transportation and Project Support System)	3.40%	9	Yes
FR 36. Assign tasks and get status updates/time reports from team members using the Caltrans e-mail system or an Internet Browser	0.96%	35	No
Objective #8 Provide supervisors with current critical path and individual prioritized task information in order to reduce project completion times.			
FR 26. Support the planning, scheduling and tracking of critical deadlines, activities, resources, and budgets	5.18%	4	Yes
FR 32. Utilize approved time sheet data to automatically update project plans each week, within one day of the required approval date	3.18%	10	Yes
Objective #9 In order to utilize fixed cost resources more effectively, ensure that the staff with the most relevant skill-set is assigned to the right task.			
FR 37. Store resource information such as name, skills, availability, location etc	1.49%	24	No
FR 38. Support "To be Hired" status of resources	0.74%	44	No
FR 39. Support a centralized resource pool for resources available for tasking;	0.99%	32	No
FR 40. Capture skills inventory and skill development needs of all resources	0.91%	36	No

	Weight	Rank (1 = highest)	In Tentative Minimum Set?
FR 41. Allow generic skill types to be assigned to specific tasks	1.16%	29	No
FR 42. Allow specific skill types to be assigned to specific tasks	1.07%	30	No
FR 43. Allow individual persons to be assigned to specific tasks	0.91%	36	No
FR 44. Allow various units of measure (FTE, Hours, Days, Cost, Percentage-based, etc.) for data capture	0.99%	32	No
Objective #10 Provide the required numbers of software licenses & system security			
FR 45. 800 scheduling and resource users	4.05%	6	Yes
FR 46. Information security at the network, DBA rights and permissions, and Application security on who can perform what functions	2.70%	11	No

STEP 7: Identify all functional requirements that are necessary to ensure project success and therefore constitute a minimum set of requirements needed to address PRSM key objectives.

The Evaluation Team met, and each team member independently listed the Functional Requirements that he or she considered to constitute a minimum set. The team then discussed each requirement that had received three or more votes as well as any of those with fewer votes about which any team member felt strongly. By unanimous consent, the team agreed on a tentative minimum set of thirteen requirements, listed below. The list is “tentative” because the Evaluation Team is concerned about how it might be used. The team wants the freedom to review high value and lowest cost/value products during the market analysis, even if they do not meet one of more of the tentative minimum requirements. See the “Vendor Evaluation” paragraph in the “Recommended Next Steps” section of this report. The Evaluation Team’s proposed final minimum requirements will be included the Market Analysis Report.

	Rank (1 = highest)
FR 1. Comparison of planned to actual costs	3
FR 2. Comparison of planned to actual milestones completed	7
FR 5. Microsoft Excel, Microsoft Access, Crystal reports, and other ODBC compliant reporting tools	8
FR 6. Allow resource allocation to projects and tasks based on actual staffing	15

	Rank (1 = highest)
requirements rather than utilizing straight-line resource allocation	
FR 8. Provide resource scheduling capability across multiple years	17
FR 12. Provide a “what-if” analysis tools to improve forecasting and project scheduling	17
FR 15. Support fixed and variable duration tasks	17
FR 21. Allow project managers and functional managers to directly access and update project plan information via their desktop or laptop accessing real-time project data, in a statewide database	2
FR 23. Allow project managers to schedule tasks statewide by Work Breakdown Structure (WBS), Caltrans standardized hierarchical structure that defines work activities	5
FR 26. Support the planning, scheduling and tracking of critical deadlines, activities, resources, and budgets	4
FR 32. Utilize approved time sheet data to automatically update project plans each week, within one day of the required approval date	10
FR 35. Support the integration with the Human Resource System being implemented under TOPSS (Staff Central) (Transportation and Project Support System)	9
FR 45. 800 scheduling and resource users	6

STEP 8: Identify opportunities for a phased implementation of PRSM functionality.

The Project Management Team met and brainstormed possible phasing scenarios for PRSM. Two possibilities were identified. These were presented to the Evaluation Team, who were unable to add to the list. The two scenarios are:

1. Phase PRSM District-by-District
2. Phase PRSM by Functionality

Phase PRSM by District

This proposal would implement initially PRSM in some Districts but not others. The Project Management Team determined that this is not feasible because:

- Districts broker work to other Districts, the Division of Engineering Services (DES) and the Southern Right of Way (R/W) Service Center. If PRSM is implemented fully in one District that would mean that several other Districts, DES and possibly the R/W Center would be working in two systems. The partial PRSM implementation would decrease, not improve, the Department’s efficiency.

- PRSM will replace XPM. Among other uses, the Department uses XPM to develop the Statewide Capital Outlay Support Budget. This budget amounts to more than \$1 Billion per year. Implementation in only a few Districts would require that the budget be developed partly in XPM and partly in PRSM. The same activities would need to be performed in both systems, doubling the effort. There would also need to be an additional effort to ensure that no projects are double-counted. One could not simply say that “Districts A through X use XPM while Y and Z use PRSM” because several Districts, the DES and possibly the R/W Center would be partly in both systems.

Phase PRSM by Functionality

This Project Management Team identified four PRSM functionalities that could be implemented piecemeal. These are:

- Implement project scheduling (replace XPM)
- Coordinate PRSM scheduling with Staff Central timekeeping (address the “Garbage In” problem). At present, in Staff Central, there is very little editing in input data. Charges are made to project work that is not planned, while there are no charges to planned work. In addition, the present system requires that employees know the codes. There is no editing to ensure that the more detailed work Breakdown Structure (WBS) elements are correctly entered. “Actual cost” data is unusable at all but the highest WBS levels.
- Download actual costs to an ODBC database (address the “Nothing Out” problem). The conventional expression is “Garbage in. Garbage out.” In Caltrans, the problem is “Garbage in. Nothing out.” The Caltrans accounting system uses software written in the late 1970s. Only people who have both advanced programming skills and an understanding of the accounting codes can get meaningful data from the system. People with this combination of skills are rare, and they are rapidly retiring from State service. PRSM provides for a download from TRAMS to a database that would make actual costs readily available to users who have neither advanced program skills nor a detailed understanding of accounting codes. The technology for this download is already well known, as there are several precedents. The two most significant precedents are discussed in Attachment D.
- Compare actual costs to the plan. This would compare the actual costs from functionality 3 to the planned costs from functionality 1.

Recommendation

After an extensive discussion, the Evaluation Team agreed on three possible phases:

Implementation Phase 1: “Download actual costs to an ODBC database.” This is a part of the PRSM scope that should be started immediately. It is an activity that will be required no matter what product is selected for PRSM, and it would yield significant immediate results for a relatively small investment. Project managers throughout the state are unable to obtain timely, reliable and official expenditure data. Implementation Phase 1 should be started as soon as

possible, and should be carried out while the Evaluation Team is working on the market analysis for Implementation Phases 2 and 3.

Implementation Phase 2: “Implement project scheduling” and “Compare actual costs to the plan.” This would replace the existing XPM system with a more accessible statewide scheduling tool and compare the planned work from the scheduling tool against the actual work reported in Implementation Phase 1.

Implementation Phase 3: “Coordinate PRSM scheduling with Staff Central timekeeping.” This would establish an interface between the PRSM scheduling and the timekeeping system to ensure that WBS elements are correctly entered on time records and to notify the appropriate managers if unplanned charges are made to projects.

During the market analysis, vendors should be asked for estimated costs for the complete solution (Implementation Phases 2 and 3 combined) and for Phases 2 and 3 separately.

Recommended Next Steps

Under the phasing recommendations in Step 8 of the Value Analysis, the steps below would apply only to Implementation Phases 2 and 3 of PRSM. Implementation Phase 1 would begin immediately and would be completed while the Market Analysis is being performed.

Market Analysis

The purpose of this step is to take the Value Analysis document and develop a Request for Qualifying Information (RFQI), working with the Department of General Services, and send it to the Commercial Off-the-Shelf (COTS) project management software vendors. Based on vendor feedback, a Market Analysis document will be developed indicating the desirability of the various COTS software products. During this step the Department will produce the deliverables described below.

The RFQI Document

This document is to contain the following:

Overview Section – This section will provide a perspective and insights into the Department’s Project Delivery including product scalability requirements (numbers of active projects by District, the number of WBS codes charged over a given period of time, etc.). The overview will also include a description of the Department’s information technology environment, standards, software and networks. Each vendor will be advised to label documents with proprietary or bid information as “eyes only – to be returned to vendor upon completion of analysis”.

Project Management System Requirements Section - This section will contain a listing of all business requirements that must be addressed in a response. These business requirements will expand on the functional requirements so that vendors can readily understand them. (Note: functional requirements are expressed in terms most readily understood by users).

A statement that the Department desires a “commercial off the self software” that allows (1) the Department to customize the system by providing its business operational data, for example, Work Breakdown Structure (WBS) and Resource Breakdown Structure (RBS), in various tables; while requiring (2) minimal coding changes. For example, importing the existing project plans from eXpert Project Manager (XPM) into their COTS software’s database.

A statement that The Department does not have a technical solution in mind; rather it is looking to each vendor to specify their best solution to the functional requirements.

A statement that the RFQI will lead to a short list of firms who will receive a Request for Proposals. Proposals will be accepted only from firms on the short list.

In its first Independent Oversight Report, Venturi Technology Partners indicated that, “Requirements have been defined at a high-level and without further elaboration may lead to not achieving project goals” and that “Missing requirements may result in an inadequate system being implemented.” The Department’s Information Technology staff is currently too heavily committed to carve out the time that is needed to fully address these concerns. The Department will therefore hire an outside consulting firm to assist in writing the RFQI. This firm will work with the Department’s business and information technology staff to improve the requirements definitions and will provide draft RFQI and RFP language. This will include requirements for reliability, capacity, performance, maintenance, maintainability and scalability. The RFQI will include the Department’s scalability needs, including the total number of projects to be tracked in PRSM, average number of WBS elements and activities per project, and potential number of resource assignments to be tracked in PRSM.

The RFQI Scoring Document

This document will be included in the RFQI to enable vendors to understand how their proposed solutions will be evaluated. It is a spreadsheet containing the relative weights for each FSR problem, objective, functional requirement and business requirement. It is to contain the number of points awarded to each vendor answer as well as their total score. It will also identify the tentative minimum requirements, from the Value Analysis.

The approach is to award points in such a fashion as to reward answers that do not require COTS software adaptations.

Potential Points Awarded to Each RFQI Business Requirement Response	
Points Awarded	Explanation
100	The requirement is addressed completely by the current COTS version. Vender is to specify the current version number.
90	The requirement will be completely addressed by the next available COTS version. The vendor is to specify the next available version number and scheduled general availability date. The general availability date must be no more than eight months from the date of the vendor's response in order to be awarded these points.
75	The requirement will be addressed either completely by a software adaptation, by a combination of a software adaptation and COTS software functionality or by any alternative approach that eliminates or reduces the need for COTS software adaptations. This response requires a clear statement as to how this is being done as well as an optimistic (lowest credible) cost of implementing the adaptation, a pessimistic (highest credible) cost of implementing the adaptation and a most likely (best guess) cost of implementing the adaptation.
0	The requirement is not addressed completely and a meaningful alternative for addressing the requirement was not proposed.

Cost Estimate

Vendor submittals will include an estimated cost range – an optimistic (lowest credible) cost of implementing the anticipated COTS solution, a pessimistic (highest credible) cost of implementing the anticipated COTS solution, and a most likely (best guess) cost of implementing the anticipated COTS solution.

Vendor Evaluation

1. Identify the COTS solutions that satisfy the “tentative minimum” requirements from the Value Analysis.
2. Score each COTS solution using the weighting scheme developed in the Value Analysis, including solutions that do not satisfy the “tentative minimum” requirements.
3. Determine a “cost/value” range for each COTS solution, including solutions that do not satisfy the “tentative minimum” requirements. This is the estimated cost the solution divided by the Value Analysis weight (or score) from step 2 of the Vendor Evaluation.
4. Telephone clients of the highest value vendors, irrespective of cost, the lowest cost/value vendors and vendors who meet the tentative minimum requirements at the lowest cost to determine their level of customer satisfaction.
5. Hold proposed system demonstrations with vendors with satisfactory customer evaluations that offer the highest value, irrespective of cost, have the lowest cost/value, or who meet the minimum requirements at the lowest cost. The purpose of these demonstrations is to verify that the vendors can perform as claimed. If a product does not meet a “tentative minimum” requirement, the vendor will be asked to explain how it might meet the requirement, or what alternative approach it might have to achieve the Department’s goals without meeting the specific requirement.

Vendor Short List

Develop a list of vendors who will receive a request for proposals (RFP).

The Market Analysis Report

This document will contain:

- Vendor Response Summary and Conclusions Section - This section contains the scoring sheets summary, including best overall response, as well as the results of the scores associated with the minimum set of requirements and costs submitted for various items.
- Recommendations Section – This section contains the recommendations for proceeding with the PRSM project. It includes the list of vendors who will receive RFP’s, a scoring and evaluation system for the technical proposal, including the passing score, minimum requirements, and the method of determining a best value selection. Best value factors may include elements such as the degree to which the bidder’s proposal satisfies the Department’s requirements, the cost of the proposed system, the technical performance of the proposed system (including scalability, reliability, availability and serviceability), the market strength of the proposed system (durability and size of the existing client base, evaluation by market research firms such as the Gartner Group, customer satisfaction, bidder’s financial ability) and the bidder’s project team experience.

- Response by Vendor Section - This section contains the scoring sheets for each vendor that responded to the RFQI including estimated costs for certain items requiring costs: adaptations, interfaces, licenses, etc.

DOF Review

Submit results of the Market Analysis for DOF review and approval prior to proceeding with next steps in procurement.

Request for Proposals

Proceed with a two-envelope RFP for vendor selection based on results of RFQI review.

- Each participating vendor will submit a technical proposal that describes how it will implement PRSM, and a cost proposal in a separate envelope.
- The technical proposals will be evaluated using the scoring system in the Market Analysis Report. If they live up to their commitments in the market analysis, all participating vendors should have passing scores. Based on the scores, a “value” will be assigned to each solution. If the solutions live up to their promises in the market analysis, the value should be similar to that found in the market analysis.
- The cost proposals of passing vendors will be opened.
- A selection will be made, using the “best value” method described in the market analysis report.

Special Project Report (SPR)

A SPR will be submitted to DOF listing the vendor, functionality and price of the proposed contract.

Award Contract

Proceed with execution of contract and begin contract work.

Attachments

ATTACHMENT A: Problems, Objectives and Functional Requirements listed in the PRSM FSR

Problem I: Caltrans cannot fully meet the reporting requirements as mandated by the Legislature and the California Transportation Commission

Objective #1 Meet the reporting requirements of SB 45 for 100% of the STIP projects.

FR 1. Comparison of planned to actual costs

Objective #2 Provide project status data such as; plan vs. actual, earned value, cost performance indexing, etc. to our transportation partners on a near-time basis.

FR 2. Comparison of planned to actual milestones completed

FR 3. Calculation of earned value

FR 4. Charts, graphs and columnar reports

FR 5. Microsoft Excel, Microsoft Access, Crystal reports, and other ODBC compliant reporting tools

Problem II: Substantial time and effort is required to develop resource-driven schedules

Objective #3 Realize efficiencies associated with entering initial workload estimates by WBS into an integrated, validating scheduling tool.

FR 13 Create project task resource and duration estimates using Workload Estimating Norms (WEN)

Objective #4 Reduce the manual effort required to compile information for the Program Resource Management semi-annual reviews.

FR 6. Allow resource allocation to projects and tasks based on actual staffing requirements rather than utilizing straight-line resource allocation;

FR 7. Provide resource-leveling capability across project tasks, making optimal use of available resource

FR 8. Provide resource scheduling capability across multiple years

FR 9. Provide statewide resource forecasting tools for programmed projects

FR 10. Allow project and functional managers to assign resources by type (i.e., civil engineer, geologist, structural engineer) to projects based on availability of resources

FR 11. Allow Headquarters to plan capacity for the program of projects independent of task level project plans; forecasting of project costs and schedule

FR 12. Provide a “what-if” analysis tools to improve forecasting and project scheduling
FR 14. Support resource and task-driven duration calculations
FR 15. Support fixed and variable duration tasks
FR 16. Support multiple project, resource constrained scheduling
FR 17. Provide actual effort and estimate-to-complete effort reporting information
FR 18. Provide cost account designation for resource assignments and expenses
FR 19. Capture calendar, contact and notes information by resource
FR 20. Support earned value analysis and reporting

Problem III: Project and functional managers are unable to status projects on a timely basis

Objective #5 Provide an enterprise scheduling tool to eliminate the need to update various shadow systems.

FR 22. Allow project managers to develop an initial project plan by either: copying an existing plan and making modifications, selecting a pre-defined template, or dynamically creating a plan from a task database based on answers to posed questions
FR 23. Allow project managers to schedule tasks by Work Breakdown Structure (WBS), Caltrans standardized hierarchical structure that defines work activities
FR 25. Provide standard & ad-hoc reporting & cross-project analysis capabilities

Objective #6 Provide project and functional manager desktop access to the resource and scheduling tool to plan and status projects at WBS level 7.

FR 21. Allow project managers and functional managers to directly access and update project plan information via their desktop or laptop accessing real-time project data
FR 24. E-mail issues to project participants

Problem IV: Caltrans does not have the ability to perform critical path scheduling and assign individuals accordingly

Objective #7 Provide a tool that allows project team members to continually forecast and optimally commit resources.

FR 27. Support the collection and reporting of timecard information for each scheduled resource
FR 28. Support capture of time by individual day or by entire work period
FR 29. Allow employees to enter all project and non-project (Jury Duty, Sick, etc) time charges
FR 30. Provide a method for staff to directly input progress on individual work assignments
FR 31. Support timesheet approval and return for correction with an e-mail alert
FR 33. Capture timesheet information for more than 12,000 COS employees

FR 34. Provide weekly employee task or “to do lists” based on project plans
FR 35. Support the integration with the Human Resource System being implemented under TOPSS (Staff Central) (Transportation and Project Support System)
FR 36. Assign tasks and get status updates/time reports from team members using the Caltrans e-mail system or an Internet Browser

Objective #8 Provide supervisors with current critical path and individual prioritized task information in order to reduce project completion times.

FR 26. Support the planning, scheduling and tracking of critical deadlines, activities, resources, and budgets
FR 32. Utilize approved time sheet data to automatically update project plans

Problem V: Caltrans lacks the ability to identify skilled individuals and resource them to specific tasks

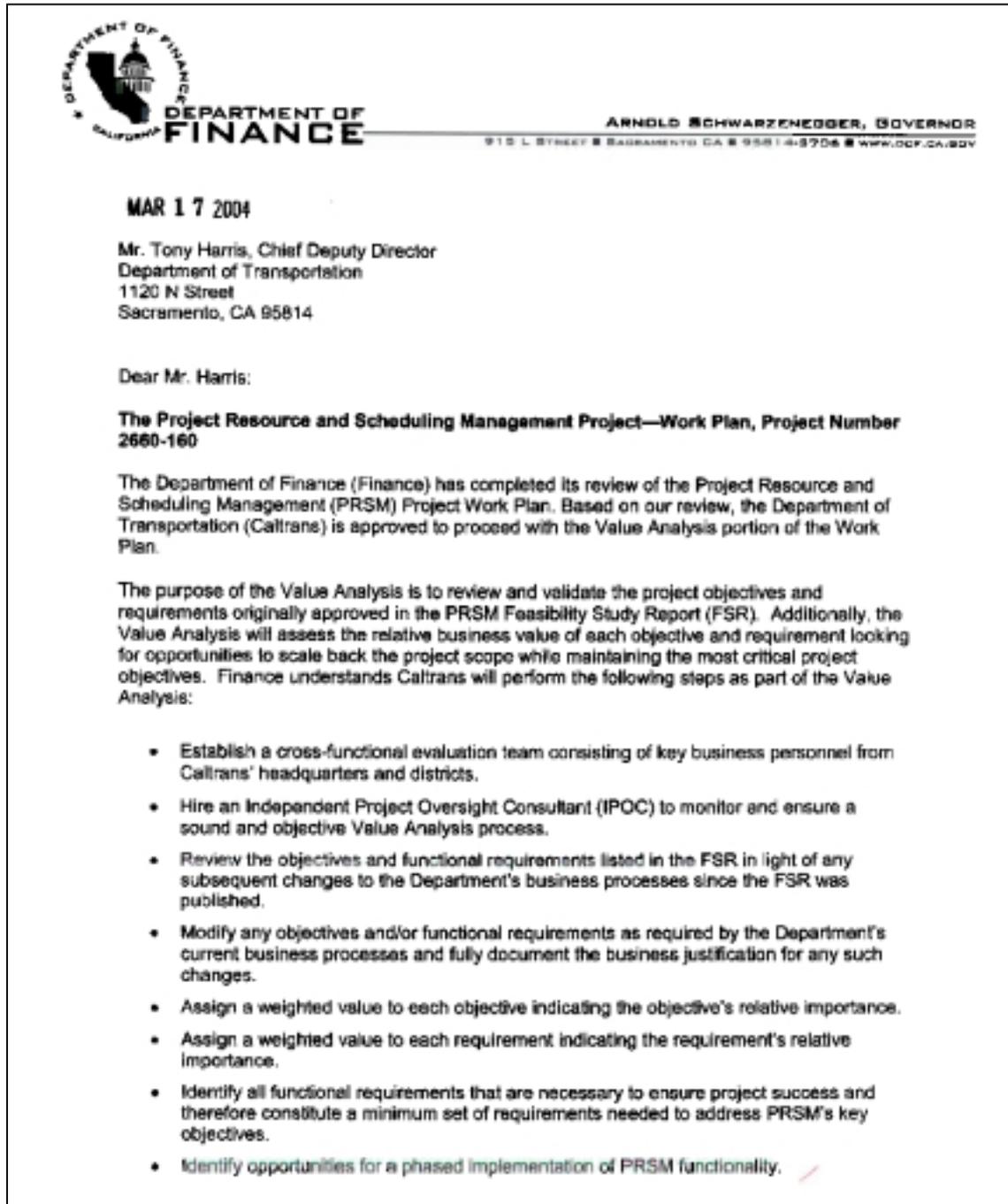
Objective #9 In order to utilize fixed cost resources more effectively, ensure that the staff with the most relevant skill-set is assigned to the right task.

FR 37. Store resource information such as name, skills, availability, location etc
FR 38. Support “To be Hired” status of resources
FR 39. Support a centralized resource pool for resources available for tasking;
FR 40. Capture skills inventory and skill development needs of all resources
FR 41. Allow generic skill types to be assigned to specific tasks
FR 42. Allow specific skill types to be assigned to specific tasks
FR 43. Allow individual persons to be assigned to specific tasks
FR 44. Allow various units of measure (FTE, Hours, Days, Cost, Percentage-based, etc.) for data capture

Objective #10 Provide the required numbers of software licenses & system security

FR 45. 800 scheduling and resource users
FR 46. Information security at the network, DBA rights and permissions, and Application security on who can perform what functions

ATTACHMENT B: Department of Finance letter of March 17, 2004



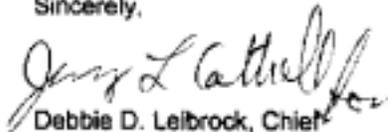
Mr. Tony Harris
Page 2

Caltrans must contract for IPOC services and the selected consultant must be fully engaged prior to initiating the Value Analysis process. The IPOC will submit their monthly reports, as defined in the Finance Oversight Framework, concurrently to Finance and Caltrans. Upon completion of this portion of the Work Plan, Caltrans will submit the Value Analysis results to Finance for review. Caltrans will not proceed with any subsequent PRSM Work Plan activities, beyond those outlined above, without written approval from Finance.

The Work Plan is being accepted in lieu of a Special Project Report (SPR) at this time. Finance expects Caltrans will submit an SPR at the conclusion of the Work Plan activities.

Any questions regarding the PRSM Project, the PRSM Work Plan, or the instructions identified above should be referred to Richard Gillihan, Technology Investment Review Unit at (916) 445-1777 ext. 3223, or via electronic mail at richard.gillihan@dof.ca.gov.

Sincerely,



Debbie D. Leibrock, Chief
Technology Investment Review Unit



Connie Squires, Program Budget Manager
Business, Transportation, and Housing Unit

cc: Mr. Michael Liang, Deputy Secretary for Information Technology, Business, Transportation, and Housing Agency

Ms. Barbara Timmer, Chief Information Officer, Department of Transportation

Ms. Ann Evans, Chief, Information Technology Program and Project Management Division, Department of Transportation

Mr. Nigel Blampied, PRSM Project Manager, Department of Transportation

Ms. Anna Brannen, Principal Fiscal and Policy Analyst, Legislative Analyst's Office

Ms. Sue Bost, Assistant Program Budget Manager, Department of Finance

Mr. Brian Annis, Principal Program Budget Analyst, Department of Finance

Mr. Mark Monroe, Budget Analyst, Department of Finance

Mr. Mark Larsen, Technology Oversight Manager, Department of Finance

ATTACHMENT C: What are the SB45 Reporting Requirements?

What the PRSM FSR says

The only explanation of the SB45 reporting requirements in the PRSM FSR reads as follows (italics added for emphasis):

“Since SB 45 mandates that support and capital costs be programmed in the STIP and debited against county shares for regional improvement projects, *the Department must track and report project expenditures against planned amounts.*”

Reporting Requirements that were in place before SB45

Federal Requirements

The Federal Highway Administration requires that project costs be reported in five elements:

- Preliminary Engineering
- Right of Way Operations
- Construction Engineering
- Right of Way Capital
- Construction Capital

This classification has been in place at least since the 1950s.

State Characters of Appropriation

Section 3 of the State Budget and Section 6806 of the State Administrative Manual (SAM) require the State’s project expenses be budgeted and reported in three “Characters of Appropriation:”

1. Support: “Salaries and all other proper expenses, including repairs and equipment, incurred in connection with the institution, department, board, bureau, commission, officer, employee, or other agency for which the appropriation is made.”¹⁰
2. Capital Outlay: “Acquisition of land or other real property, major construction, improvements, equipment, designs, working plans, specifications, repairs, and equipment necessary in connection with a construction or improvement project.”¹¹ “The acquisition / creation / renovation of real assets is classified as capital outlay if the state holds ownership.”¹²
3. “State-funded but locally-owned infrastructure is classified as Local Assistance.”¹³

The relevant text of Section 3 of the State Budget and Section 6806 of the SAM appears in endnote 4.

Under a 1986 agreement between Finance and Caltrans, A&E consultants hired by Caltrans are included in Support. In other California State departments, A&E consultants are included in Capital Outlay.

The State Transportation Improvement Program

Before SB45 was enacted in 1997, only Construction Capital and Right of Way Capital were programmed in the STIP. These programmed items corresponded to the federal definitions.

Preliminary Engineering, Construction Engineering and Right of Way Operations did not appear in the STIP. For State Highway projects, they were budgeted by the Legislature in annual increments as part of the Caltrans Support budget. This budget was not specific to any project or projects.

There was no provision in law for funding Preliminary Engineering, Construction Engineering and Right of Way Operations for Local Assistance projects.

Programming changes made by SB45

SB45 of 1997 requires that all project costs be programmed in the STIP. This creates the matrix below of pre-and-post SB45 programming and budgeting requirements:

	Character of Appropriation		
	Support	Capital Outlay	Local Assistance
Project Development (corresponds to the Federal “Preliminary Engineering”), divided into two “components”: <ul style="list-style-type: none"> ▪ Permits and Environmental Studies ▪ Plans, Specifications and Estimates 	Formerly budgeted by the Legislature in annual increments (not project-specific). Now programmed, project-specific, in the STIP.	No provision for programming or budgeting prior to SB45. Now programmed, project-specific, in the STIP.	
Rights-of-Way (includes both Operations and Capital)	Formerly budgeted by the Legislature in annual increments (not project-specific). Now programmed, project-specific, in the STIP.	Programmed, project-specific, in the STIP before, and since, SB45	
Construction (includes both Engineering and Capital)			

Reporting requirements added by SB45

Under SB45, the programmed amounts are debited against a “county share.” Seventy-five percent of the STIP is assigned to counties through a formula. The remaining twenty five percent is dedicated to interregional improvements. Once programmed, the debited amount can be changed only for the events tabulated below.¹⁴

Programmed Project Component	What would change the amount debited to the County Share?
Project Development	<i>Actual</i> accumulated costs at the time of construction vote that are greater than 120 percent or less than 80 percent of the programmed amount.

Programmed Project Component	What would change the amount debited to the County Share?
Rights-of-Way	An <i>estimated</i> final right-of-way cost at the time of construction vote that is greater than 120 percent of the programmed amount.
Construction	<ol style="list-style-type: none"> 1. The engineers <i>estimate</i> at the time of construction vote. 2. Supplemental construction funds <i>voted</i> by the California Transportation Commission.

Thus the only *actual cost* that affects the county share is the cost of project development. It is only for STIP project development that “the Department *must* track and report project expenditures against planned amounts” under SB45.

As noted in the discussion of Item 3 in Step 4, the State employee labor costs on STIP project development amounted to \$193 Million in 2002-03, while the total of all State employee project labor costs amounted to \$965 Million.

Although not required by law, prudence and fiduciary responsibility demand that Caltrans track and report project expenditures against planned amounts on all its projects. Once the tool is in place to meet the legal requirements for STIP project development, it will also be in place for all other programmed projects.

“Programmed Projects” versus “Capital Projects”

In March 1999, Caltrans submitted a FSR for the Project Cost and Schedule Management System (PCSM – Project 2660-157). This included a plan to solve the inconsistency between two usages of the word “project” in State law. These are:

Programmed Project: A proposed transportation improvement in a geographic location that is listed in a programming document (such as the STIP). This is how the word “project” is used in SB45. It focuses on the allocation of money.

Capital Project: A temporary endeavor undertaken to produce a unique physical improvement to the transportation system in California. This is how the word “project” is used in the Public Contracts Code. It focuses on physical construction.

“State Highway projects” referred to throughout this report are capital projects. (Capital projects also include improvements to local streets and roads, railroads, airports, etc.)

There is a many-to-many relationship between these two usages of the word “project.” A single programmed project provides funding for an improvement that may be built as parts of several capital projects. Likewise a single capital project may build parts of the improvements funded by several programmed projects.

The Caltrans accounting system, TRAMS, records costs of capital projects. It does not include any records for programmed projects.

The December 1999 rejection of PCSM, and June 2000 approval of PRSM was, in effect, a decision to do a manual reconciliation between programmed projects and capital projects on State Highways. *PRSM will record only the planned and actual costs of capital projects.*

In November 2000, the Caltrans Statewide Project Management Improvement Team (SPMIT) adopted a procedure whereby a budget will be assigned manually for each capital project, showing how much funding that capital project is to receive from each contributing programmed project. Caltrans will then develop a baseline plan for that capital project, which will be loaded into PRSM. The baseline plan will be changed only if the capital project receives a new distribution of funds from the programmed projects.

The “SB45 reports” described in PRSM Functional Requirement 1 will compare the baseline plan (“planned costs”) to the actual costs from TRAMS. Both PRSM and TRAMS will be working solely with capital projects.

A manual process will be required to re-assign the accumulated costs of capital projects to programmed projects. This will be a reverse of the process described above where the budget is assigned from programmed projects to capital projects.

ATTACHMENT D: Proposed PRSM Phase 1 (part of Step 8)

In attempts to address the difficulty of obtaining of expenditure information, Caltrans has developed two standard downloads to more accessible systems. These are:

1. TRAMSEXP, a monthly download from the accounting system, TRAMS, to a mainframe RAMIS database. This has the following limitations:
 - a. There are separate TRAMSEXP databases for each transaction year (i.e., for transactions recorded between July 1 and June 30 of each year). One can therefore obtain data only for one year at a time.
 - b. The TRAMSEXP file consists of accounting codes without any English interpretations. Users must therefore know the meanings and use of many codes.
 - c. To obtain data from TRAMSEXP, one must be able to write RAMIS code.
 - d. At the most detailed level, TRAMSEXP costs can be traced only to the numbered organizational unit. It is not possible to trace costs to the individual who incurred the expense.

2. A monthly download of State Employee Labor Dollars and Hours from the Labor Expenditure File that is loaded into a web-reporting tool by staff in District 7. This contains staff hours and personal services dollars, by name. It has the advantage that it identifies the originator of the costs, which makes it possible for managers to request timesheet corrections.

The existence of TRAMSEXP and the labor expenditure file is evidence that it is possible to download actual cost data from TRAMS. This can be started immediately and it would have enormous immediate benefits to Caltrans. The downloaded file would be used to report actual costs on the Caltrans intranet using a tool such as Oracle Discoverer or Cognos. It is required for PRSM and is part of the PRSM scope, so there would be no wasted work.

The downloaded file would be similar to TRAMSEXP, with the following additional data:

1. All data back to July 1998, when SB45 took effect. Before that date, there were no project-specific budgets for project development, so it was not possible to compare “planned versus actual costs.” (See the discussion of SB45 reporting in Attachment C).
2. English translations of the Accounting codes. These are available in TRAMS, but they are not currently downloaded in TRAMSEXP. They are combined with fields from TRAMSEXP in some ad-hoc reports.
3. Identification, by name and applicable TRAMS codes, of the individual or vendor who incurred the charges, as the labor expenditure report currently does for labor costs only.

ATTACHMENT E: Participant Recognition

STEP 1: Establish a cross-functional Evaluation Team consisting of key business personnel from headquarters and the districts.

Selection of Evaluation Team (by PRSM Steering Committee):

James Davis, Allan Kosup, Barbara Timmer, Gil Tafoya,
James Hammer, Rick Guevel, Tony Marquez, Yader
Bermudez, Kent Stodden

Department of Finance Observer: Richard Gillihan

Nominators of possible Evaluation Team members:

Amarjeet Benipal, Yader Bermudez, Ihab Abouelfittouh,
Tad Teferi, Khalil Saba, Craig Holste, Jim Beil, Allan
Kosup, Tony Marquez, Rick Guevel.

STEP 2: Hire an Independent Project Oversight Consultant (IPOC) to monitor and ensure a sound and objective Value Analysis process.

Statement of Work: Steve Maan, William Brown

Evaluation of the possible use of the A&E Value Analysis “On Call” Contract:
George Hunter, Scott McGowan, Tim Craggs

Evaluation of the possible use of the A&E Project Management “On Call” Contract: Brent Soulis

MSA Contract solicitation, processing and encumbrance:
William Brown, Norlen Seibert, Emma McIntyre, Victor Haggerty, John Foley

MSA Contractor selection: Brent Soulis, Paul Engstrom, Barbara Monday, Omar Elkhayat

MSA Contract management and invoice payment:
Brent Soulis, Stefanie Acton

STEPS 3 THROUGH 8: Value Analysis

Evaluation Team: Nigel Blampied (*ex officio*), Brent Green, Muhammad Din, Christine Cox, Brad Mettam, Mark Archuleta, Jamal Elsaleh, Shahin Sepassi, Son Nguyen, Alan Anderson, Bill Naddy, Guy Paulsell

PRSM Project Management Team: Nigel Blampied (Project Manager), Jim Shepherd, Iman Sallam, Steve Maan, Paul Lukkarila, Rita Encinas

Independent Project Oversight: Mike Duskus, Floyd Layher, Craig Hollyfield

Endnotes

¹ Government Code 4529.11. All projects included in the State Transportation Improvement Program programmed and funded as interregional improvements or as regional improvements shall be subject to Article XXII of the California Constitution. *The sponsoring governmental entity shall have the choice and the authority to contract with qualified private entities for architectural and engineering services.* For projects programmed and funded as regional improvements, the sponsoring governmental entity shall be the regional or local project sponsor. For projects programmed and funded as interregional improvements, the sponsoring governmental entity shall be the State of California, unless there is a regional or local project sponsor, in which case the sponsoring governmental entity shall be the regional or local project sponsor. The regional or local project sponsor shall be a regional or local governmental entity.

² STIP project components are defined by Government Code 14529 (b) as follows:
Government Code 14529. (b). For each project, the program shall specify the allocation or expenditure amount and the allocation or expenditure year for each of the following project components:

- (1) Completion of all permits and environmental studies.
- (2) Preparation of plans, specifications, and estimates.
- (3) The acquisition of rights-of-way, including, but not limited to, support activities.
- (4) Construction and construction management and engineering, including surveys and inspection.

³ Because the work is on the State Highway, it is defined as “Capital Outlay” by Section 3 of the Budget and Section 6806 of the State Administrative Manual. The word “Local” is added to distinguish it from Capital Outlay that is managed by the Department.

Annual State Budget, SECTION 3.00. Whenever herein an appropriation is made for support, it shall include salaries and all other proper expenses, including repairs and equipment, incurred in connection with the institution, department, board, bureau, commission, officer, employee, or other agency for which the appropriation is made.

Whenever herein an appropriation is made for capital outlay, it shall include acquisition of land or other real property, major construction, improvements, equipment, designs, working plans, specifications, repairs, and equipment necessary in connection with a construction or improvement project.

State Administrative Manual, section 6806. The state appropriates funds in three broad classifications—state operations (support), local assistance, and capital outlay—referred to as the character of appropriation. Unless statutory language specifically allows otherwise, once budgeted as one of the three characters, a program or activity must follow that classification's expenditure rules.

Infrastructure management uses all three characters of appropriation, depending on the activity. The general rule is that the acquisition/creation/renovation of real assets is classified as capital outlay if the state holds ownership. Operation and maintenance of state real assets is classified as state operations. State-funded but locally owned infrastructure is classified as local assistance.

⁴ Government Code 14520.3. (b) The department is responsible for the planning, design, construction, maintenance, and operation of the state highway system.

(c) In addition to other responsibilities established by law, the department is the responsible agency for performing all state highway project components specified in subdivision (b) of Section 14529 of the Government Code except for construction.

⁵ Article XXII of the California Constitution:

1. The State of California and all other governmental entities, including, but not limited to, cities, counties, cities and counties, school districts and other special districts, local and regional agencies and joint power agencies, shall be allowed to contract with qualified private entities for architectural and engineering services for all public works of improvement. The choice and authority to contract shall extend to all phases of project development including permitting and environmental studies, rights-of-way services, design phase services and construction phase services. The choice and authority shall exist without regard to funding sources whether federal, state, regional, local or private, whether or not the project is programmed by a state, regional or local governmental entity, and whether or not the completed project is a part of any State owned or State operated system or facility.

2. Nothing contained in Article VII of this Constitution shall be construed to limit, restrict or prohibit the State or any other governmental entities, including, but not limited to, cities, counties, cities and counties, school districts and other special districts, local and regional agencies and joint power agencies, from contracting with private entities for the performance of architectural and engineering services.

⁶ Government Code 19130. (b) Personal services contracting also shall be permissible when any of the following conditions can be met:

(1) The functions contracted are exempted from civil service by Section 4 of Article VII of the California Constitution, which describes exempt appointments.

(2) The contract is for a new state function and the Legislature has specifically mandated or authorized the performance of the work by independent contractors.

(3) The services contracted are not available within civil service, cannot be performed satisfactorily by civil service employees, or are of such a highly specialized or technical nature that the necessary expert knowledge, experience, and ability are not available through the civil service system.

(4) The services are incidental to a contract for the purchase or lease of real or personal property. Contracts under this criterion, known as "service agreements," shall include, but not be limited to, agreements to service or maintain office equipment or computers that are leased or rented.

(5) The legislative, administrative, or legal goals and purposes cannot be accomplished through the utilization of persons selected pursuant to the regular civil service system. Contracts are permissible under this criterion to protect against a conflict of interest or to insure independent and unbiased findings in cases where there is a clear need for a different, outside perspective. These contracts shall include, but not be limited to, obtaining expert witnesses in litigation.

(6) The nature of the work is such that the Government Code standards for emergency appointments apply. These contracts shall conform to Article 8 (commencing with Section 19888) of Chapter 2.5 of Part 2.6.

(7) State agencies need private counsel because a conflict of interest on the part of the Attorney General's office prevents it from representing the agency without compromising its position. These contracts shall require the written consent of the Attorney General, pursuant to Section 11040.

(8) The contractor will provide equipment, materials, facilities, or support services that could not feasibly be provided by the state in the location where the services are to be performed.

(9) The contractor will conduct training courses for which appropriately qualified civil service instructors are not available, provided that permanent instructor positions in academies or similar settings shall be filled through civil service appointment.

(10) The services are of such an urgent, temporary, or occasional nature that the delay incumbent in their implementation under civil service would frustrate their very purpose.

(c) All persons who provide services to the state under conditions the board determines constitute an employment relationship shall, unless exempted from civil service by Section 4 of Article VII of the California Constitution, be retained under an appropriate civil service appointment.

⁷ For instance, shadow systems might compare PRSM data to programming data. By its rejection of PCSM in December 1999, Finance forbade Caltrans from including programming data in PRSM. See the discussion of "Programmed Projects" versus "Capital Projects" in Attachment C.

⁸ ODBC: Open Database Connectivity

⁹ Chapter 622, Statutes of 1997

¹⁰ Section 3 of the State Budget (quoted above)

¹¹ Section 3 of the State Budget (quoted above)

¹² Section 6806 of the State Administrative Manual (quoted above)

¹³ Section 6806 of the State Administrative Manual (quoted above)

¹⁴ Streets and Highway Code 188. (d) For the purposes of this section, funds programmed shall include the following costs pursuant to subdivision (b) of Section 14529 of the Government Code:

(1) The amounts programmed or budgeted for both components of project development in the original programmed year.

(2) The amount programmed for right-of-way in the year programmed in the most recent state transportation improvement program. If the final estimate is greater than 120 percent of the amount originally programmed, the amount shall be adjusted for final expenditure estimates at the time of right-of-way certification.

(3) The engineer's final estimate of project costs, including construction engineering, presented to the commission for approval pursuant to Section 14533 of the Government Code in the year programmed in the most recent state transportation improvement program.

(4) Project costs shown in the program, as amended, where project allocations have not yet been approved by the commission, escalated to the date of scheduled project delivery.

(e) Project costs shall not be changed to reflect any of the following:

(1) Differences that are within 20 percent of the amount programmed for actual project development cost.

(2) Actual right-of-way purchase costs.

(3) Construction contract award amounts.

(4) Changes in construction expenditures.

Streets and Highway Code 188.10. (a.) The commission, with assistance from the department and regional agencies, shall maintain a long-term balance of shares, shortfalls, and surpluses for regional improvement programs.

(b) The balance shall include all of the following:

(1) Shares from the fund estimate for each state transportation improvement program pursuant to Section 14525 of the Government Code.

(2) Amounts programmed in each state transportation improvement program pursuant to Section 14529 of the Government Code.

(3) Surpluses or shortfalls due to reservations or advancements pursuant to subdivision (i) of Section 188.8.

(4) Amounts deducted or added because of changes in project development costs or a cost increase or savings in the final engineering estimate or the final right-of-way certification estimate at the time of allocation for construction, pursuant to subdivisions (d) and (e) of Section 188.8.

(5) Any supplemental project allocations during or following construction.

(6) Amounts deducted or added because of amendments to the state transportation improvement program that add, delete, or change the scope and cost of regional improvement projects, pursuant to Section 14531 of the Government Code.