Value Analysis Program

ANNUAL REPORT

Federal Fiscal Year 2010/2011

October 1, 2010 - September 30, 2011

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EXECUTIVE SUMMARY

The Federal Fiscal Year (FY) 2010/11 was a busy year for the Department's Value Analysis (VA) Program. Utilizing the statewide VA contracts, studies are performed continuously throughout the year. Over 53 task orders were written to perform studies during this fiscal year. This requires a great deal of effort and persistence to coordinate and perform these studies. The team of District VA Coordinators work diligently to ensure the success of the VA program.

Last year, 59 studies were completed on projects with a total cost (capital and support) of over $4.78 billion. Of the 59 studies, 37 were performed by Caltrans staff with consultant Certified Value Specialist (CVS) team leaders. The other 22 studies were performed by our local partners such as cities, counties, and local transportation authorities. The results of these studies are also included in this annual federal VA report.

The Department reported a savings of $192 million to the Federal Highway Administration (FHWA) for the 2010/11 federal fiscal year. These savings were derived from the "Accepted Alternatives" proposed by the VA teams and implemented by the decision-makers, project managers, functional managers, and Project Development Teams (PDT). In comparing the cost savings to the cost to conduct the studies, the Department achieved a Return on Investment (ROI) of 71:1 meaning $71 in savings for every dollar spent on conducting the studies.

The Joint Stewardship and Oversight Agreement between the Department and the FHWA lists four performance indicators/measures for the Value Analysis Program: percent of required studies conducted, number of non-required studies conducted, percent project cost savings, and implementation rate. The Department conducted 100 percent of all required studies for the 2010/11 Federal Fiscal Year. In addition, the Department performed nine studies on projects costing less than the $25 million threshold for highway projects or the $20 million threshold for Bridge projects. The Department also reported an average cost savings of 4 percent, which is consistent with the national average, but falling short of our 5 percent goal. The implementation rate is determined by comparing the number of proposed recommendations to the number of implemented recommendations. The Department's implementation rate was 49 percent for last year.

In addition to performing traditional project VA studies, the Department's VA Program has many other activities throughout the year. This year has been no exception. Several process studies were initiated along with our new one day "Team Member" training. The program also continued in developing best practices for two pilot projects which started last year. They include our technical exchange with the Korean Expressway Corp and a joint FHWA and Caltrans effort to combine VA with the Road Safety Audits process. This year, the Department was also very active in the AASHTO VE technical committee. All of these activities are highlighted in this report.

2010/2011 PROGRAM RESULTS

During the federal fiscal year ending September 30, 2011 the Department completed the following Value Analysis activities:

- Fifty-nine (59) studies were completed including nine (9) non-mandated studies. The total estimated project cost of the fifty-nine (59) transportation projects completed was $4.748 billion. Of the 59 studies, Caltrans performed 37 studies using the Departments' statewide contracts, and the remaining studies were performed by our local partners.

- An additional ten (10) transportation project studies were performed, but not completed this FY. The results of these studies will be reported when complete.

- Project teams implemented 161 of 329 proposed recommendations resulting in $192 million in savings. Table 1 summarizes the results of the VA transportation project studies.

- In addition to the project VA studies, eight process VA studies were performed. These studies are designed to improve the Department's business practices. See the "Process Studies Section" (page 8) for details on these studies.

- Forty (40) Value Engineering Change Proposals (VECPs), also known as Cost Reduction Incentive Proposals (CRIPs), were submitted by contractors and approved by the Department resulting in savings of $4,480,000 (the State shared 50% of these savings).

Table 1: Value Analysis Studies – Federal FY 2010/2011

Study Sponsor	No. Studies	Original Project Costs	Value Analysis Alternatives				Total Study Cost	Return on Investment	Project Savings	Implementation Rate
			Proposed		Implemented					
		($Million)	No.	Savings ($Million)	No.	Savings ($ Million)	(x 1000)			
Caltrans	37	$1,680	165	$192	79	$97	$1,854	52:1	6%	48%
Local Agency	22	$3,104	164	$233	82	$95	$856	8:1	0%	38%
Total	59	$4,784	329	$425	161	$192	$2,710	71:1	4%	49%

The VA program has been striving to improve the quality of alternatives so that the decision-makers can be confident in approving and implementing recommended changes. The **total implementation rate** of the VA Program (the percentage of Implemented Alternatives with respect to Proposed Alternatives) was **49%**. One of the main barriers to implementation is the timing of the study. Table 2 shows the average return on investment, implementation rate and savings by project phase. The greatest return on investment was during the environmental phase (0 phase) which is consistent with the national average. The Department did find some success early in the Design phase. However, as studies performed late in the PS&E phase had more constraints, the return on investment and project savings fell dramatically.

Table 2: VA Study Results by Phase

Project Phase	# of Studies	ROI	Implementation Rate (%)	Savings %
Planning	0	0	0	0
PA&ED	22	100	46	4
Early PSE	7	63	44	6
Late PSE	30	5	67	1

Table 3 shows a comparison of results by District. District 4 completed the most studies with 12 last year. District 12 had the highest return on investment with 449:1. District 11 had the highest implementation rate with 78%. District 3 had the highest average cost savings with 20 percent.

Table 3: VA Study Results by District

District	# of Studies	ROI	Implementation Rate (%)	Avg. Project Savings (%)
2	4	-53	50	-8
3	6	135	46	20
4	12	0	46	0
6	6	27	46	3
7	7	96	51	8
8	9	23	54	2
10	5	17	30	2
11	3	-9	78	-1
12	7	449	54	4
Statewide Totals	59	71	49	4

HISTORICAL PROJECT SAVINGS

The historical savings from the Department's VA program are presented graphically in Chart 1. Chart 1 shows the cumulative savings over the past 20 years. Almost $2.9 billion in savings has been identified from over 700 studies performed. Table 5 indicates the number of studies performed by each District over the last 20 years.

Chart 1:
Cumulative Project Saving

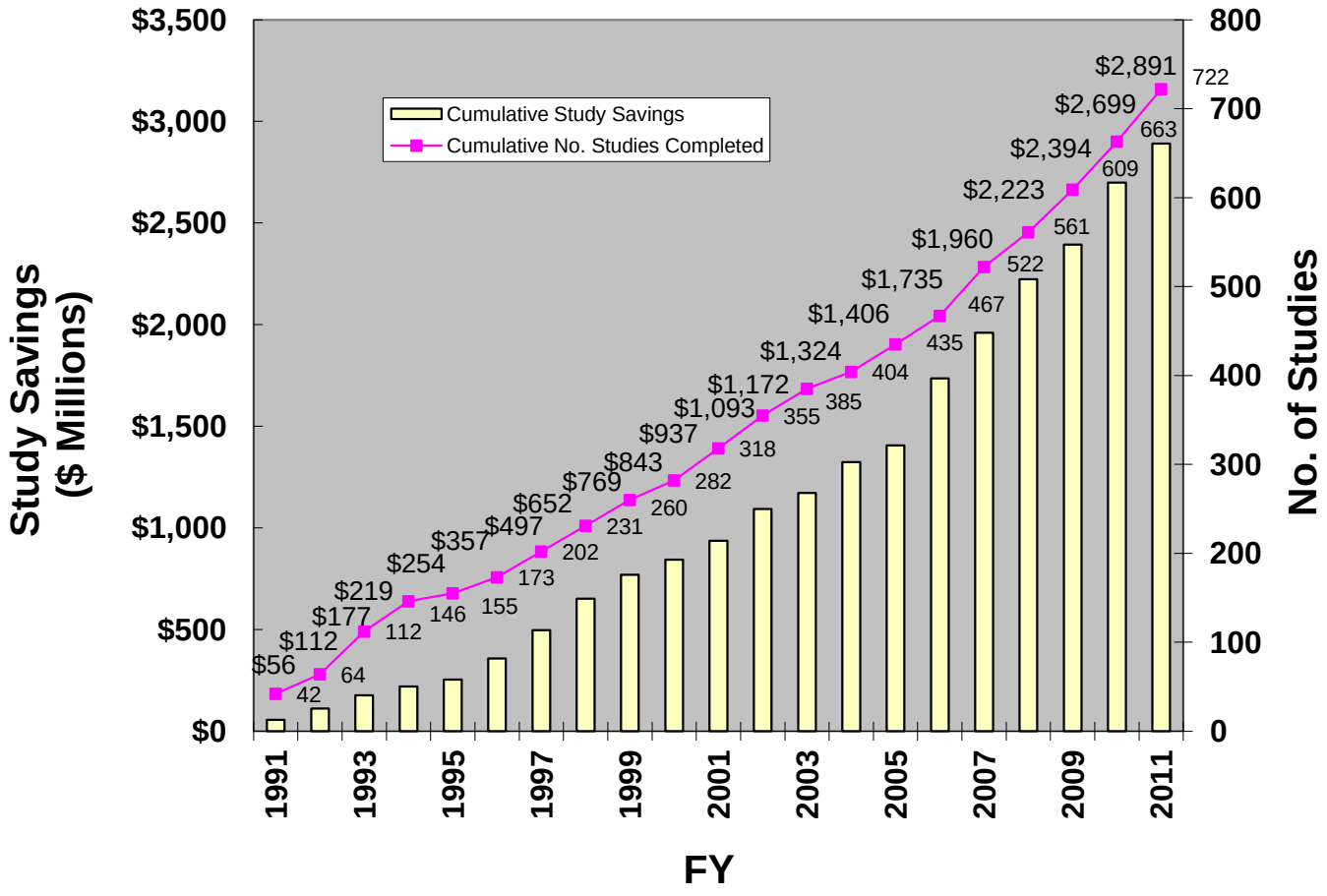


Table 5: Number of VA studies Completed (1990-2011)

Year	District												Total
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
1990	1	2	0	2	1	0	1	0	2	2	2	0	**13**
1991	0	6	1	4	5	2	0	1	1	2	4	3	**29**
1992	2	0	1	5	6	2	0	0	1	0	5	0	**22**
1993	3	6	2	6	0	4	4	7	2	1	12	1	**48**
1994	2	3	0	6	2	0	1	11	1	1	5	2	**34**
1995	1	0	2	0	0	0	1	0	0	0	5	0	**9**
1996	1	2	1	8	0	0	0	1	0	0	3	2	**18**
1997	0	3	0	10	1	2	2	2	1	0	7	1	**29**
1998	1	0	1	6	0	2	8	1	0	2	6	2	**29**
1999	0	1	2	6	0	2	7	2	0	0	6	3	**29**
2000	0	1	0	6	1	0	1	3	3	2	5	0	**22**
2001	0	2	4	7	1	2	5	3	2	2	7	1	**36**
2002	3	1	1	15	1	1	6	4	2	0	1	2	**37**
2003	1	0	1	6	0	2	9	9	0	1	1	0	**30**
2004	0	1	1	5	0	2	6	1	0	0	3	0	**19**
2005	1	1	3	4	2	2	5	9	0	1	3	0	**31**
2006	0	1	1	9	2	2	3	7	0	6	1	0	**32**
2007	0	3	4	8	8	3	5	16	0	5	2	1	**55**
2008	0	0	4	8	0	2	5	8	0	5	5	2	**39**
2009	2	2	5	8	4	3	5	13	0	3	1	2	**48**
2010	2	4	8	9	2	9	4	8	0	2	3	3	**54**
2011	0	4	6	12	0	6	7	9	0	5	3	7	**59**
Total	**20**	**43**	**48**	**150**	**36**	**48**	**85**	**115**	**15**	**40**	**90**	**32**	**722**

PERFORMANCE CRITERIA

In addition to realizing substantial cost savings, the Department is also working closely with our local partners to find common ground to maximize the performance of projects. This year marked the third year that FHWA required the Department to report how the VA studies affected the performance of projects. The Department's VA Program was the first program in the nation to use performance criteria during VA studies. Recently FHWA has adopted these measures to capture the successes of VA alternatives.

FHWA has divided the performance criteria into five categories; Safety, Mobility, Operations, Environmental Impacts, and Innovative Construction. These differ slightly from the Department's standard performance measures. The Department includes Maintainability and measures Local Operations and Mainline Operations separately. FHWA has asked the states to identify the number of accepted alternatives that impact one or more of the five performance categories significantly. At this time, only positive impacts are being reported, see Table 4.

This year the Department reported 29 alternatives improving Operations, 40 alternatives improving Environmental Impacts, 81 alternatives that improved the Constructability of the project, and 67 others such as Maintainability.

Table 4: Positive Performance Improvements by District

District	Operations	Environmental	Innovative Construction	Other
2	3	2	3	6
3	3	4	5	5
4	7	9	21	12
6	1	10	11	7
7	0	3	12	12
8	9	10	17	12
10	0	0	5	6
11	4	1	0	2
12	2	1	7	5
Total	29	40	81	67

OTHER VA PROGRAM ACTIVITIES

Throughout the year, the HQ VA Program partners with the Districts and Divisions to use the VA process to benefit the Department. Because VA provides a structured approach for process improvements, VA is a useful tool for the Department. This year, Caltrans was recognized for the work we have done in streamlining our business practices. At this year's AASHTO VE Peer Exchange Workshop, the Department was awarded with the "Most Value Added Proposal – Improved Process" award.

It's important to the Department to engage with other DOT professionals to share ideas, develop policies, and streamline our programs using best practices and lessons learned from our counterparts across the nation. The HQ VA program is very active in the AASHTO VE Technical Committee. This year, Troy Tusup, VA Program Manager was elected Vice Chair of the AASHTO Technical Committee. He will serve a two-year term as Vice-Chair and then promote to a two-year term as Chair of the Committee. He frequently embraces ideas from other AASHTO partners and incorporates them into the Department's VA Program.

In addition to performing traditional VA studies on projects and processes, the HQ VA Program is establishing a toolbox of procedures that incorporates the VA function oriented techniques. This year, the VA Program joined forces with FHWA and developed a hybrid workshop which merged two successful programs, Road Safety Audit (RSA) and Value Analysis (VA).

PROCESS STUDIES

The VA Program uses the VA process to streamline and improve on the way the Department does business. Two studies to improve the project delivery process were conducted: the Right of Way Railroad Certification process including Cert 3W and Construction & Maintenance (C&M) agreements, and the PID process for locally sponsored projects.

The Right of Way Railroad Certification Process is at times a source of delay in project advertisement (Ready to List). The purpose of this study was to document the process and improve the efficiency. It was reported to the team that approximately 15-20 projects pass through this process per year. The biggest risk of this process is that FHWA has indicated that projects should not be listed for construction without the C&M Agreement in place.

The duration of the baseline process was determined to be 60 months, of which 36 months of activity was undertaken following the Project Approval and Environmental Document (PA&ED) phase of the project. The inputs to this process included design and environmental certifications. The outputs include the Public Utilities Commission (PUC) Application and Approval, C&M Agreement, Service Agreements, Property Appraisals, and the delivery of real estate parcels as required. Much of the work is originated in the Districts, while the final approval of all outputs takes place at Headquarters as approved by Legal. Since the agreements are with outside stakeholders, their involvement and approval are necessary. Across the State there are approximately 23 different stakeholders who may enter into agreement with Caltrans from time to time. Each has somewhat different requirements. This makes it difficult to standardize the process.

The VA team, comprised of a variety of Right of Way (R/W) agents, R/W engineers, and Railroad Coordinators from HQ and Districts, embraced the challenge over a 6-day workshop. They met with external stakeholders, mapped out the process, determined the process' basic functions, and developed some solutions. The team proposed eight (8) recommendations which included some staff realignment, standardizing contract language, more aggressive management of projects, more frequent stakeholder partnering sessions, policy and guidance updates, staff education, and reduces the risk of delay at RTL. These recommendations would decrease the delivery process by approximately 25% or 18 months. Most of these recommendations have been embraced by management and efforts are being made to incorporate them into their business practices.

Another successful process review was to streamline the PID process for locally sponsored projects on the State Highway system. Both Caltrans and the local Sponsors concurred that they struggle with the definition of what is required in the PID and the actual use for the PID. The length of time that it takes to get a PID through the approval process is inordinately long with the requirements being defined differently from District to District, Oversight Manager to Oversight Manager and among Sponsors. There is a lack of consistency across the state which has led to frustration between Caltrans staff and local Sponsors. A cross-divisional team from Design and Planning was formed to identify and review the current approach and provide improvements.

The study team reviewed the existing approaches to PID preparation and the review process and realized an opportunity to streamline and standardize how the document is prepared, reviewed and approved. The team reviewed the current approach for the PSR/PDS to the PID as the baseline for the process.

The proposed new PSR/PDS approach will provide the following benefits:

- This will meet the Conceptual Approval needs of the local Sponsors to allow them to move into the next phase of the project, but not approval of the project.
- Eliminates the redundant work that is currently occurring between the PID and the PR.
- A requirement will be added which ensures there is a much greater discussion and assessment of risk. Along with that assessment, the ownership of the risk will be identified and agreed upon between Caltrans and the Sponsor.
- This new process will shorten the entire project delivery cycle, benefiting Caltrans and the Sponsors.
- Costs and resources currently needed for PID Oversight and production of the PID document will be reduced while meeting the Sponsors' needs.
- This new process will help to facilitate the much needed consistency that is required throughout the state and removes some of the challenges related to information and data preferences.
- Much stronger partnerships between Caltrans and the Sponsors will be encouraged including increased communication.
- A formal Quality Assurance/Quality Control plan will be required from the Sponsors. A template will be developed to be used throughout the state.

The VA study team members, decision-makers and sponsors discussed the importance of how this new process should perform. Performance Attributes were developed, defined and weighted. Most of these recommendations have been embraced by management and efforts are being made to incorporate them into their business practices.

ROAD SAFETY AUDIT / VALUE ANALYSIS

The VA Program has many tools in its toolbox. We are always looking for ways for the VA process to streamline and improve the project delivery process. This year, the VA program joined FHWA to develop a process which would combine two similar processes: Road Safety Audit (RSA) and VA. This combined workshop was featured at the 2009 AASHTO VE Conference where many VE specialists engaged in the process and developed a streamlined approach to the hybrid workshop. The RSA/VA idea is a national effort to utilize the two like processes and create a hybrid workshop that focuses on user safety.

The RSA and VA are both systematic independent team approaches to solving transportation problems. Subject matter experts (SME) start with a RSA team which focuses on site conditions, user behaviors, and stakeholder input. The multiple site visits help the team analyze live conditions on and off peak hours and focus on the safety aspect of the location. Once complete, the RSA team findings are taken into a VA study and recommendations are developed to solve the RSA issues and concerns. Ideally the process is performed over 6-8 days with an independent team of transportation experts, local law enforcement, local stakeholders, and RSA/VA team leaders.

Caltrans and FHWA agreed to perform three workshops throughout the State which would be used to analyze best practices to create a process of likely scenarios for the use of RSA/VA. HQ VA program in conjunction with District 1 Planning, FHWA, and our Local Partners held the first of three combined RSA and VA workshops. This study was a success in getting local opposition to sit down with the Department and see both sides of the transportation story. The systematic format of the RSA/VA workshop lends itself to finding common ground and safety driving solutions to complex situations throughout the whole corridor.

The other two projects, Yol-16 Capay Valley and Ala-84 Niles Canyon, are in design and construction phases and have been met with local opposition. These workshops are scheduled to be held this fiscal year. Hopefully, from the experiences and feedback, the VA Program will develop another valuable tool to add to the VA toolbox.

AASHTO VALUE ANALYSIS AWARD

Caltrans Document Retrieval System (DRS) team scored highest in the “Most Value Added Proposal – Improved Process” category, which was rated by the American Association of State Highway and Transportation Officials (AASHTO) Value Engineering Technical Committee. Using stringent criteria, representatives from around the country honored Caltrans at the 2011 AASHTO VE Peer Exchange Workshop.

From left to right: Renee Hoekstra, RH & Associate; Carlos Ruiz, AASTHO VE Technical Committee Chairperson from NMDOT; and Troy Tusup, Caltrans Value Analysis Program Manager.

The Statewide Document Retrieval System (DRS) has become the premier Archive system for “Project History” data. Policy only calls for storing As-Built data in the system. This study was used to reach out to all Programs within the Department. With over 1 million documents and growing in DRS, the Department’s commitment is essential for future development and support. This was a 3-step study that determined how to support and maintain DRS without other resources, define the “Value of DRS”, and create policy to define stakeholder buy-in.

Multiple teams were formed to create all the Policies, Duty Statements, and guidance. The 10-member value analysis (VA) team, with the assistance of a panel of 9 technical advisors and 10 stakeholders, developed nineteen (19) VA Alternatives to address staffing, policies, and potential strategies for growth and maintenance of the Statewide DRS. Some facts about DRS include:

- Over 1.1 million documents current loaded
- Over 30,000 downloads per year
- Almost 5,000 hits per month
- Support cost over $3 million annually
- Legal Dept. uses DRS for improved ability to prevail in Design Immunity cases against the Department. Once complete, potential cost avoidance could save nearly $75 million in annual settlement fees.
- Document look-up takes minutes compared to hours, saving almost a million dollars a year in staff time.

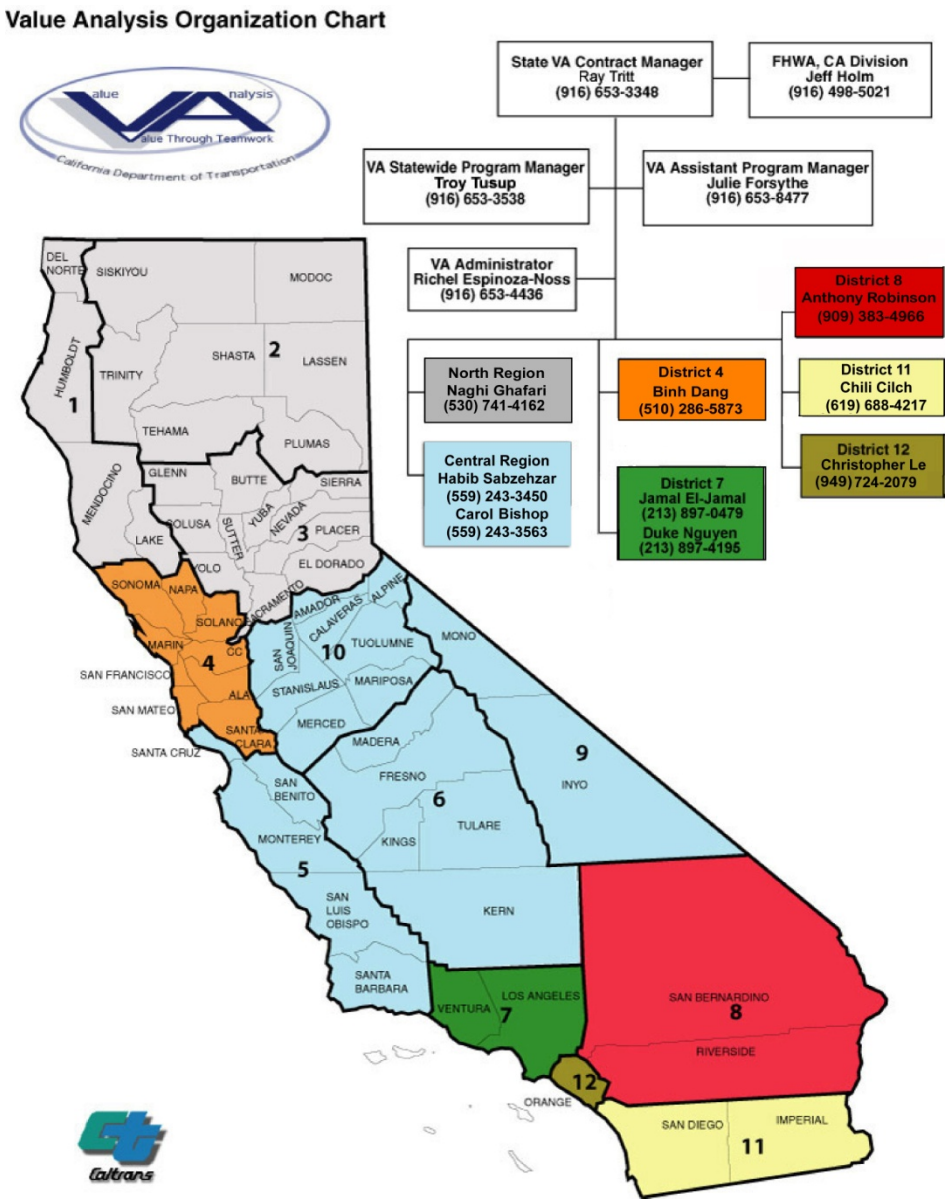
Today, policies are being considered and staffing has been re-directed to support DRS. Special thanks go to retiring Marion Kodani, DRS Administrator, for her dedicated years of service to the DRS program.

VA PROGRAM ORGANIZATION

The Department has been actively engaged in Value Analysis (VA) for more than 40 years. Both consultants and in-house VA team leaders are used to organize and conduct VA studies under the leadership of District VA Coordinators (DVAC). The Office of Special Projects in the Headquarters Division of Design manages the VA Program for the entire state.

VA Program Mission: Provide stewardship and improve mobility across California through application of the VA methodology on the Department's projects, products, and processes.

VA Program Vision: The Department is a leader in the application of Value Analysis in the transportation industry.



UPCOMING EVENTS

- Sixteen other studies were performed, but not finalized, in fiscal year 2010/2011. These studies are in various stages of progress and most will be reported next year. Many of these studies were performed on local projects where the Department played an oversight role in the process.

- The Department's VA Program will continue to administer a one-day training workshop on "How to be an Effective VA Team Member". Please contact the local DVAC for information.

- The 2013 American Association of State Highway Transportation Officials (AASHTO) Value Engineering Peer Exchange Workshop will be held in Minnesota. This joint workshop with DOT and FHWA VE experts will continue talks on policy and procedural changes needed throughout the nation. Planning for this event is well on its way.

- Continuing our pilot technical exchange with the Korean Expressway Corporation. A second study in District 11 on the I-15/SR-94 Express Lanes project has been initiated and is currently being studied. Results should be available in the next report.

- The Department's VA guidance will be modified to meet the 2010 FHWA review team's process improvement recommendations. Also, FHWA will be releasing a new Federal Rule which could affect our policy. The Department's policy and guidance will be updated appropriately. New Team Guides and Report Guides are in the process of being developed to reflect these changes.

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