

Value Engineering Annual Report FY 2018/2019



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Executive Summary

Value Engineering During Project Development

The districts conducted 24 studies or 92% of the original number of studies scheduled for fiscal year 2018/2019. The original work plan had 26 studies scheduled for the year and the target was to complete 75% or 20 of the planned studies. Due to the dynamics of the department's work program, 10 of the 26 scheduled studies (38%) were either dropped from the work plan altogether or rescheduled for a future fiscal year, while 8 of the conducted studies were added to the original work plan.

During this same period, the districts acted on 173 recommendations, approving 83 for a 48% adoption rate. Fifty-seven of the approved recommendations resulted in \$83.1 million in project cost avoidance/savings. The remaining 26 approved recommendations were value added recommendations that increased project performance, while adding \$10.8 million to the project cost. Therefore, the total value of the approved recommendations, including the value added recommendations, produced **\$72.3 million in project cost avoidance/savings**.

The approved recommendations resulted in a 5.11% project saved, 2.29% program saved and a Return on Investment (ROI) of \$63.9 to \$1. The percent project saved is calculated by dividing the value of all approved recommendations by the total costs of the projects studied, while the percent program saved is calculated by dividing the value of all approved recommendations by the average project cost of three fiscal year lettings. The ROI is calculated by dividing the value of all approved recommendations by the cost of administering the program.

There were 144 pending recommendations totaling \$1.85 billion in potential cost avoidance/savings at the end of the 2018/2019 fiscal year. This is a 118% increase in the total number of pending recommendations and a 115% increase in the amount of pending dollars from the 4th quarter of fiscal year 2017/2018. Fifty-six of the 144 recommendations have been pending for more than 12 months, which is 39% of the total number of pending recommendations. Since the VE Study is a 'snapshot' of the project at some point in time of project development and projects are continuously moving forward in development, this is a concern. The longer recommendations are unresolved and in a pending status the less likely that they will be adopted because the development of the project has advanced.

Cost Savings Initiatives During Construction

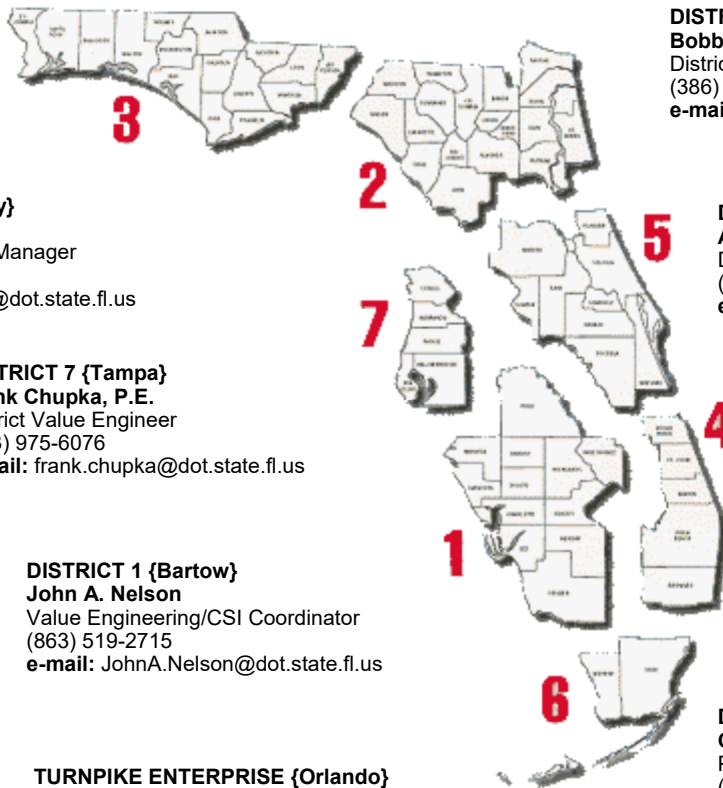
Twenty-five Cost Savings Initiative (CSI)'s) Proposals were submitted during fiscal year 2018/2019. During this same period, the districts approved 23 proposals totaling more than \$10.78 million in savings. The approved CSI proposals resulted in a 0.17% project saved and a 0.33% program saved. There are currently 4 pending CSI's totaling \$1.09 million in potential project savings.

Program Organization

Mission: Administer the Florida Department of Transportation Value Engineering and Cost Savings Initiative Programs, satisfying the needs of the stakeholders.

Vision: Value Engineering . . . providing an effective support function which maximizes project and process value for the transportation systems in the State of Florida.

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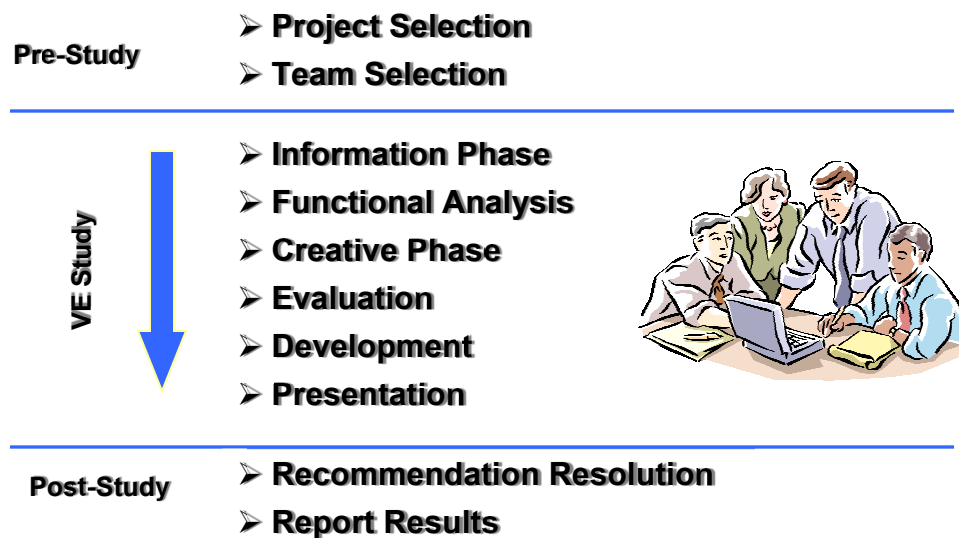
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Value Engineering Overview

What is Value Engineering

Value Engineering (VE) is the formal application of a proven and effective tool used to improve the value of a project, product or service. VE strives to optimize the use of allocated funds without reducing the quality or performance. A multi-disciplined team is assembled and the six phases of the VE Job Plan (Information, Functional Analysis, Creative, Evaluation, Development and Presentation) are used to guide the team through the process.

VE Job Plan



The administration of the VE Program can be broken down into the following key processes.

Pre-Study	Study	Post Study
Project Selection	Conduct VE Study	Recommendation Resolution
Team Selection		Report Results

Value Engineering Overview

Performance Measures

The VE Program and the Cost Savings Initiative (CSI) Program are managed through the use of the Process Control Systems found in Appendix B. Each process has a set of Quality and In-Process measures that are used to evaluate the performance of the program. The Quality Measures for the overall VE program are defined below.

VE Program	
Quality Measure	Calculation
Q1: Approved Cost Avoidance Recommendations	Sum of all approved cost avoidance/ savings recommendations
Q2: Approved Value Added Recommendations	Sum of all approved value added recommendations
Q3: Adoption Rate	$\frac{\text{\# of Approved Recommendations}}{\text{\# of Proposed Recommendations}}$
Q4: Percent Project Saved	$\frac{\text{Value of Approved Recommendations}}{\text{Total Project Costs}}$
Q5: Percent Program Saved	$\frac{\text{Value of Approved Recommendations}}{\text{3 Year Monthly Average Lettings}}$
Q6: Return on Investment (only reported annually)	$\frac{\text{Value of Approved Recommendations}}{\text{Total cost of VE Program}}$

Cost Savings Initiative Overview

What is Cost Savings Initiative

The Cost Savings Initiative Program offers an opportunity for the contractor to propose cost savings ideas prior to work beginning and as work progresses on a project. Contractors can demonstrate their innovation and ingenuity by proposing ideas that contribute to the cost effectiveness of the project. The contractors are then rewarded for this ingenuity and innovation by sharing in any project savings generated from an approved Cost Savings Initiative (CSI) proposal.

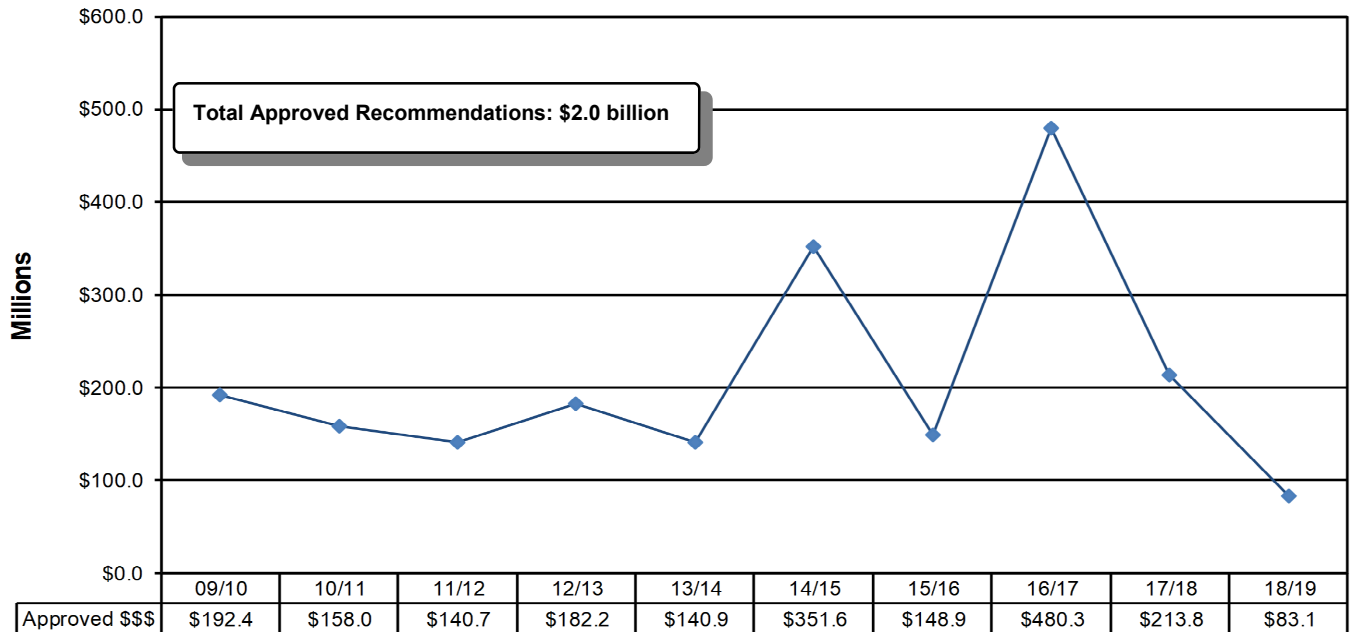
Performance Measures

CSI Program	
Q1: Number of CSI's	Sum of all CSI's
Q2: Approved Cost Savings	Sum of all approved CSI savings
Q3: Percent Project Saved	$\frac{\text{Value of Approved Proposals}}{\text{Total Project Costs}}$
Q4: Percent Program Saved	$\frac{\text{Value of Approved Recommendations}}{\text{3 Year Monthly Average Lettings}}$

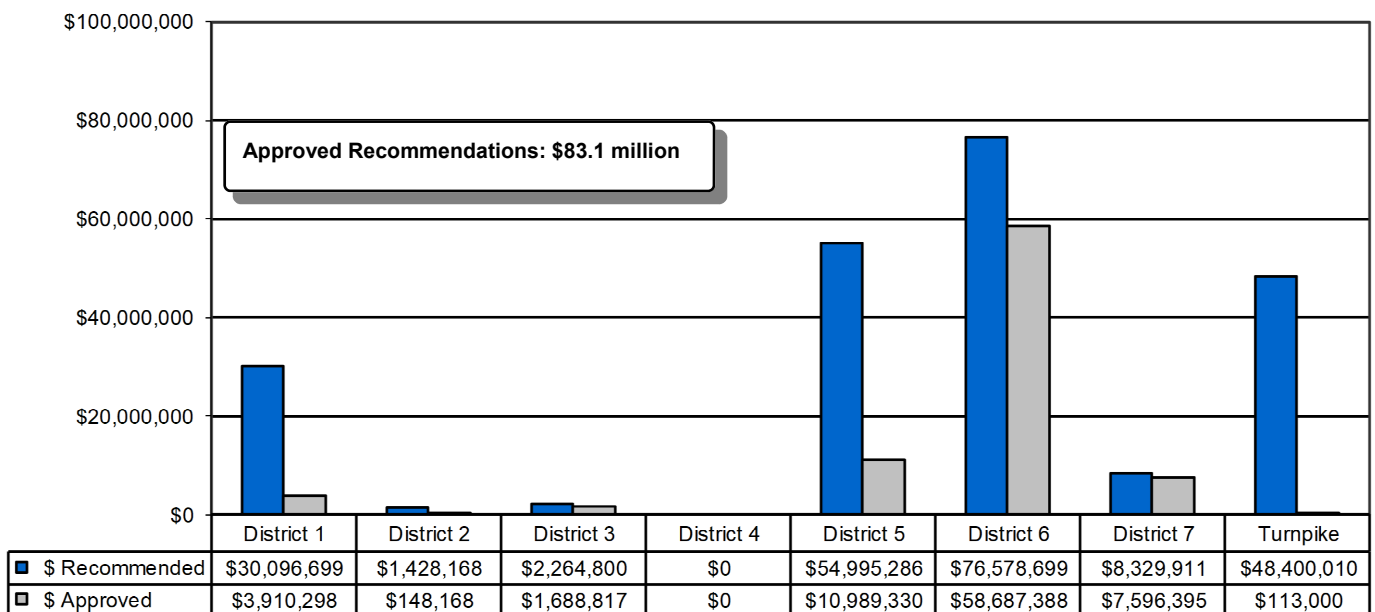
**Fiscal Year 2018/2019
Value Engineering
Performance Measures**

Adopted Recommendations

Q1: Annual Approved Cost Avoidance/Savings

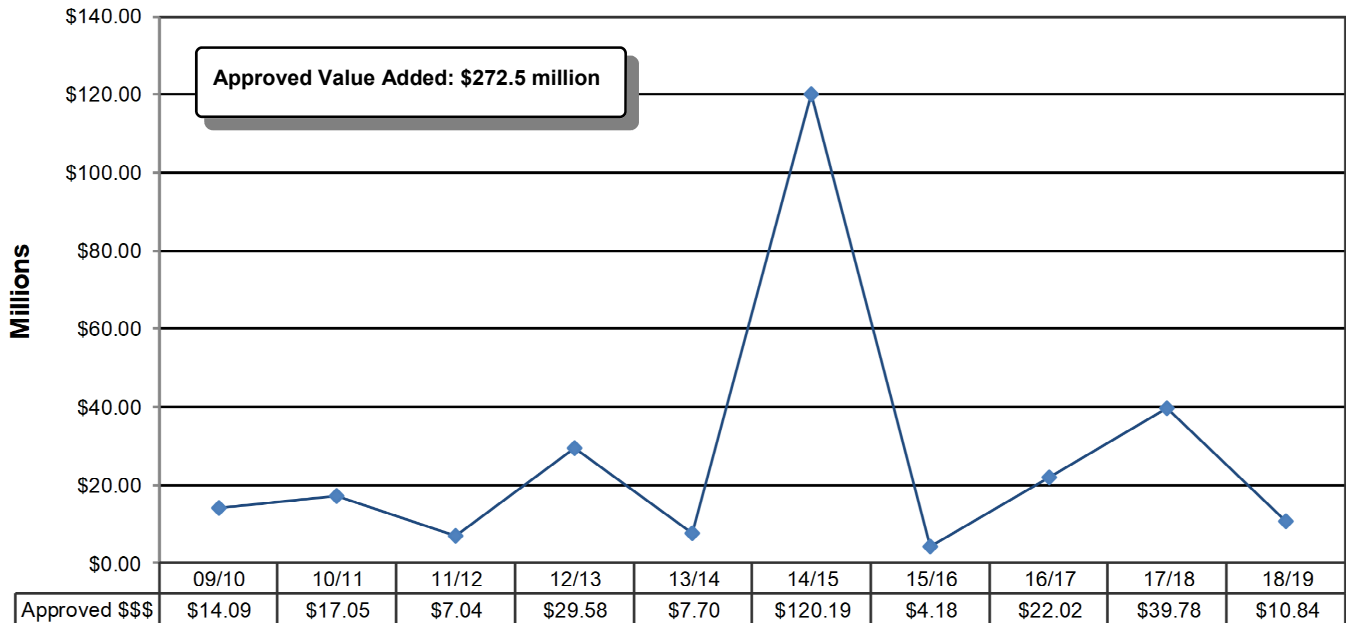


Q1: Cost Avoidance Recommendations
Annual Report FY 2018/2019

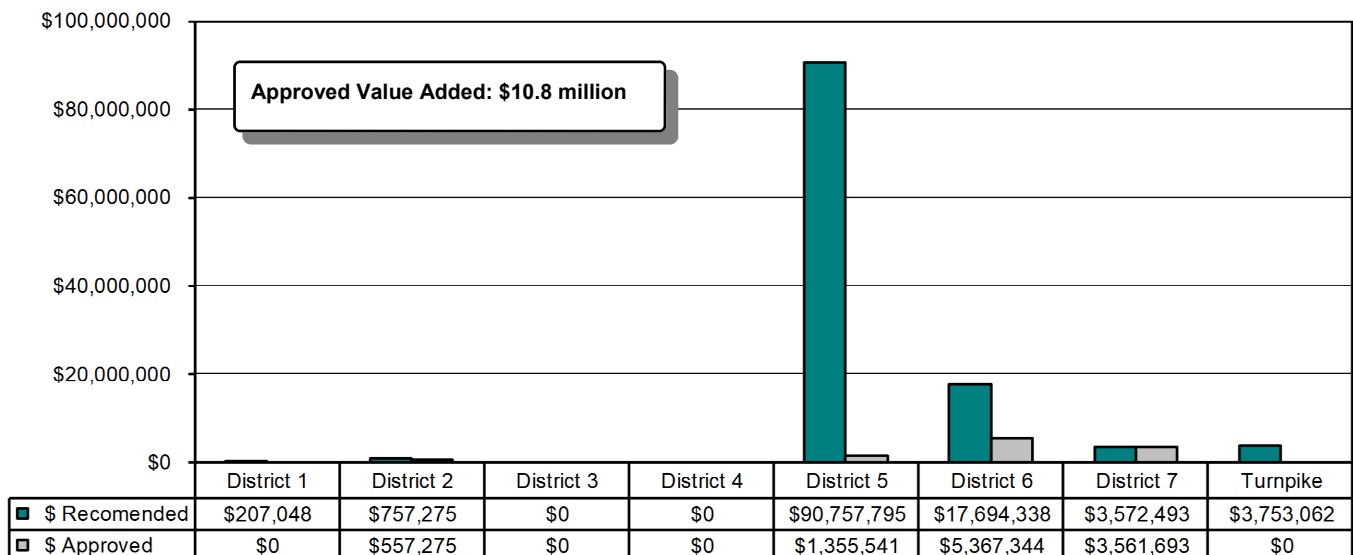


Adopted Recommendations

Q2: Annual Approved Value Added Recommendations



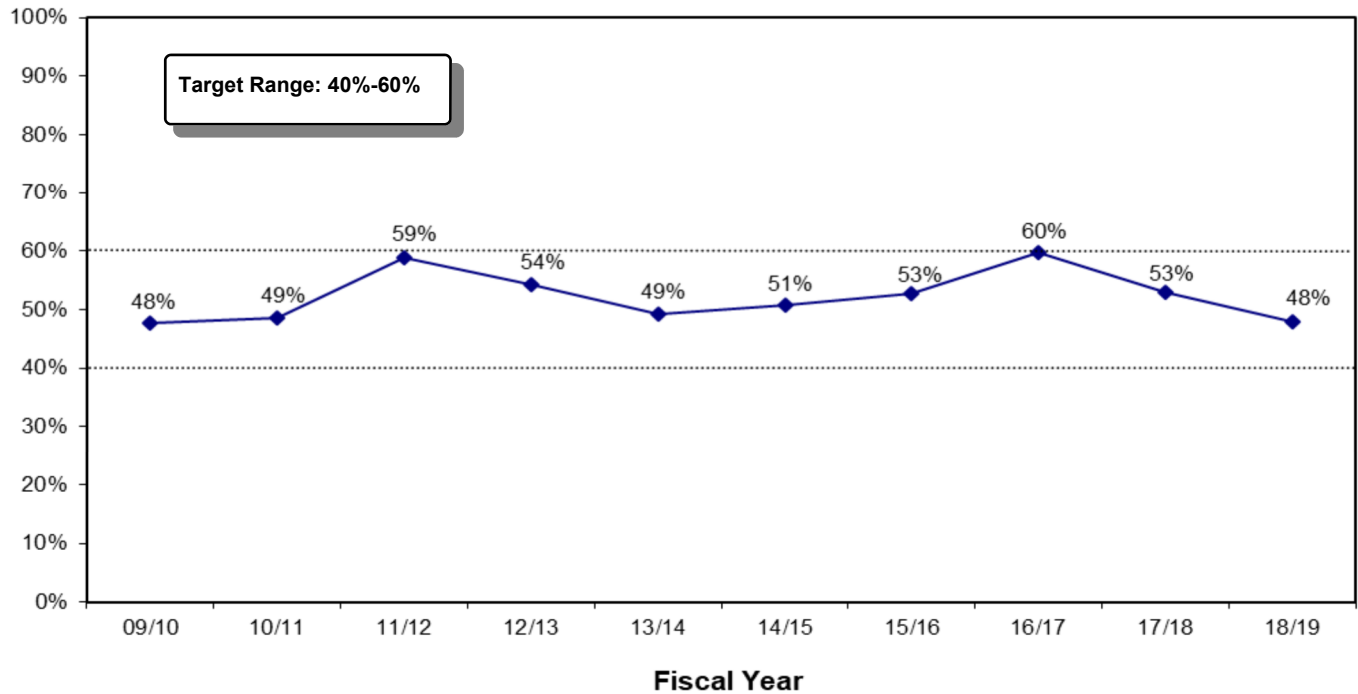
**Q2: Value Added Recommendations
Annual Report FY 2018/2019**



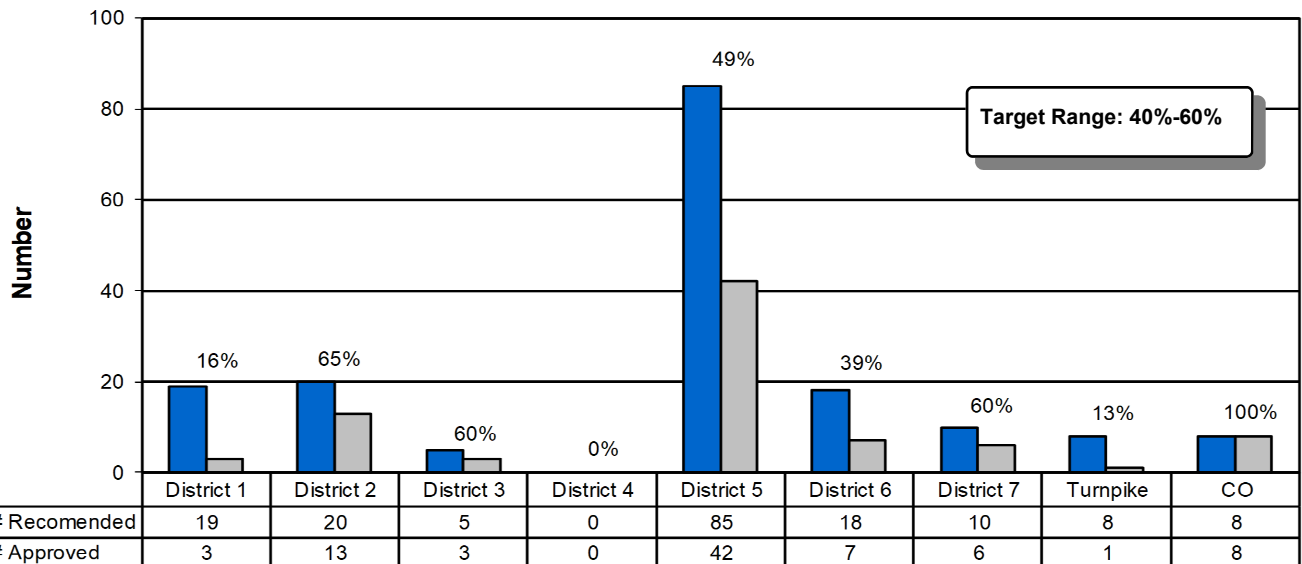
* A Value Added Recommendation significantly increases the performance of a function while also increasing the cost.

Adoption Rates

Q3: Annual Adoption Rate

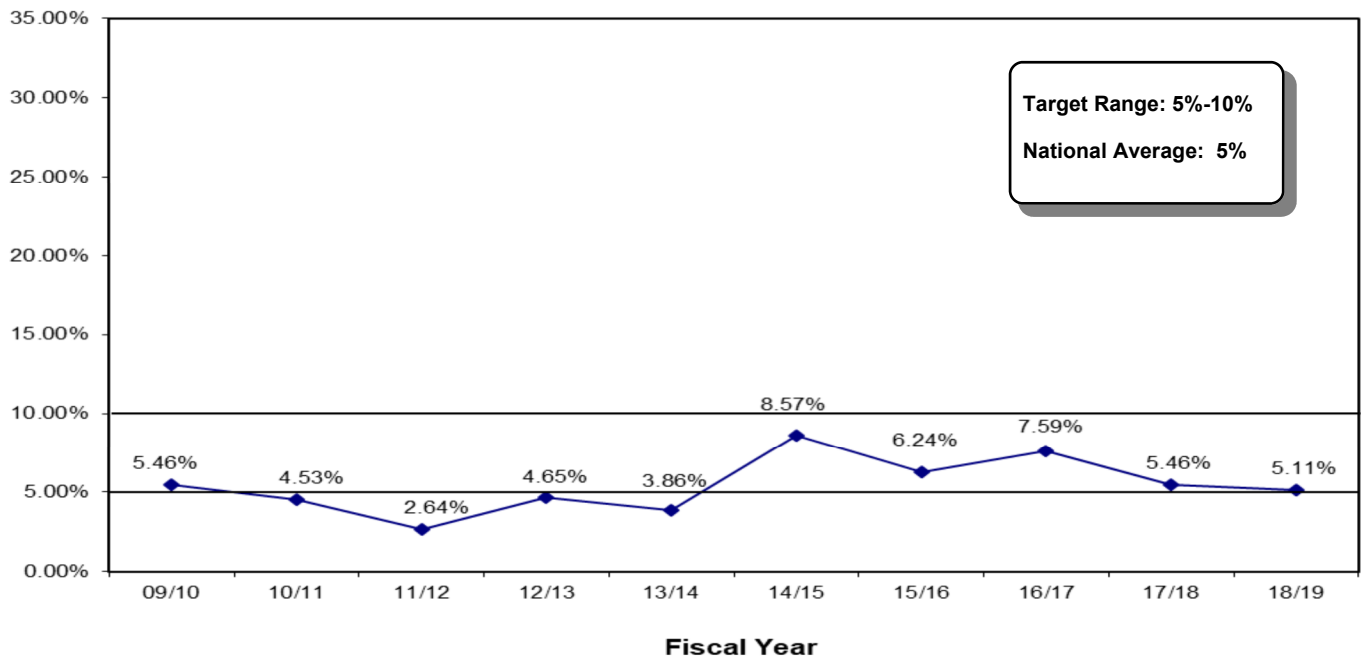


**Q3: Adopted Recommendations
Annual Report FY 2018/2019**

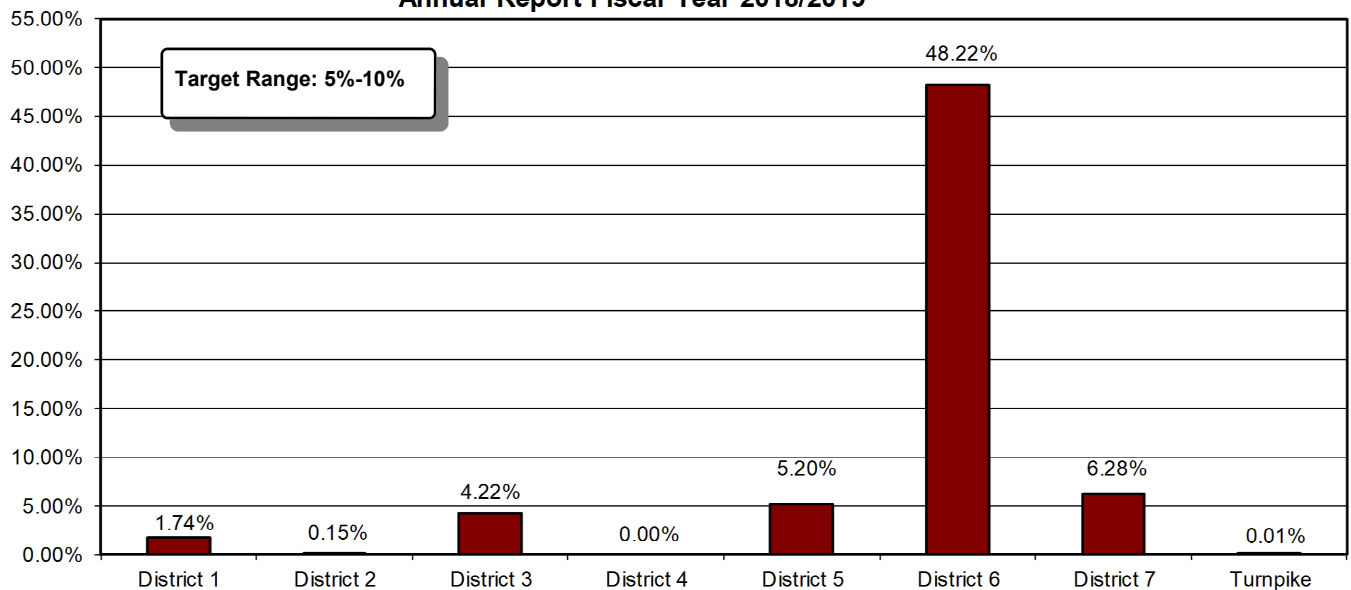


Percent Project Saved

Q4: Annual Percent Project Saved

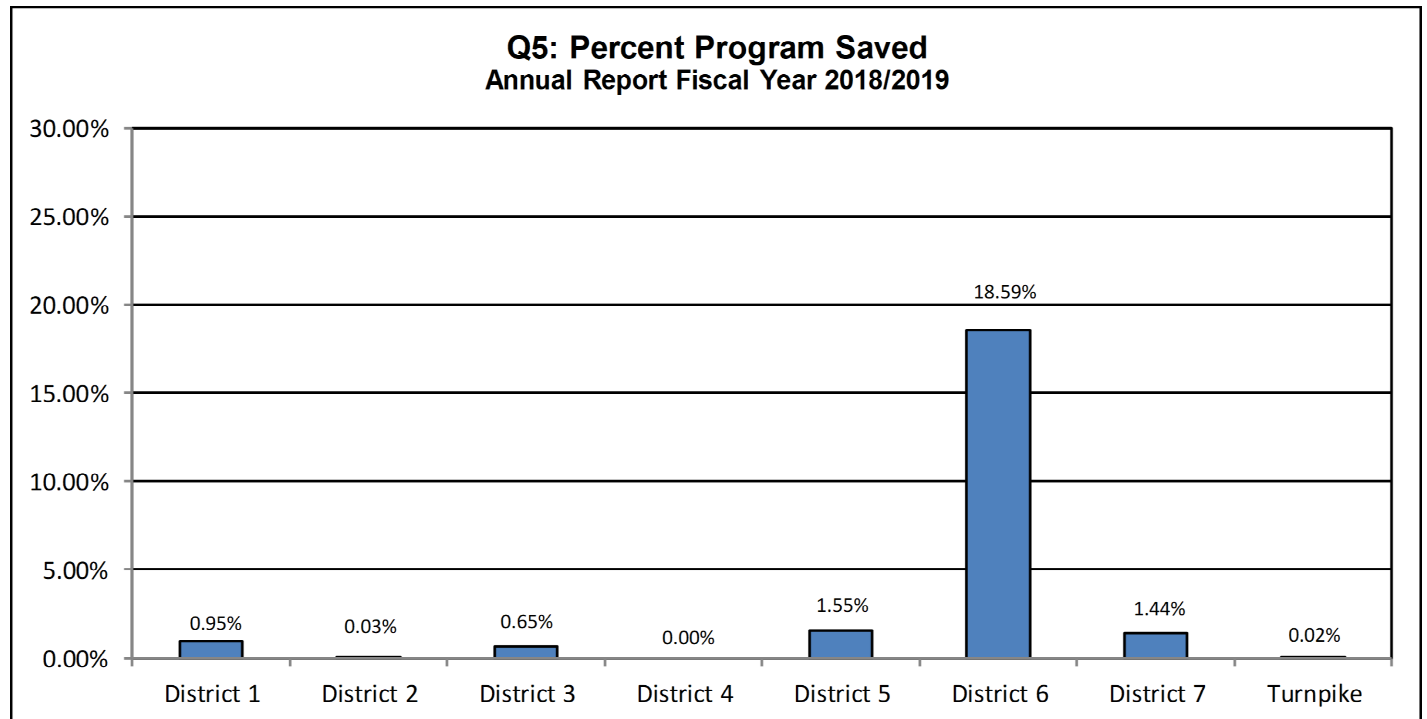
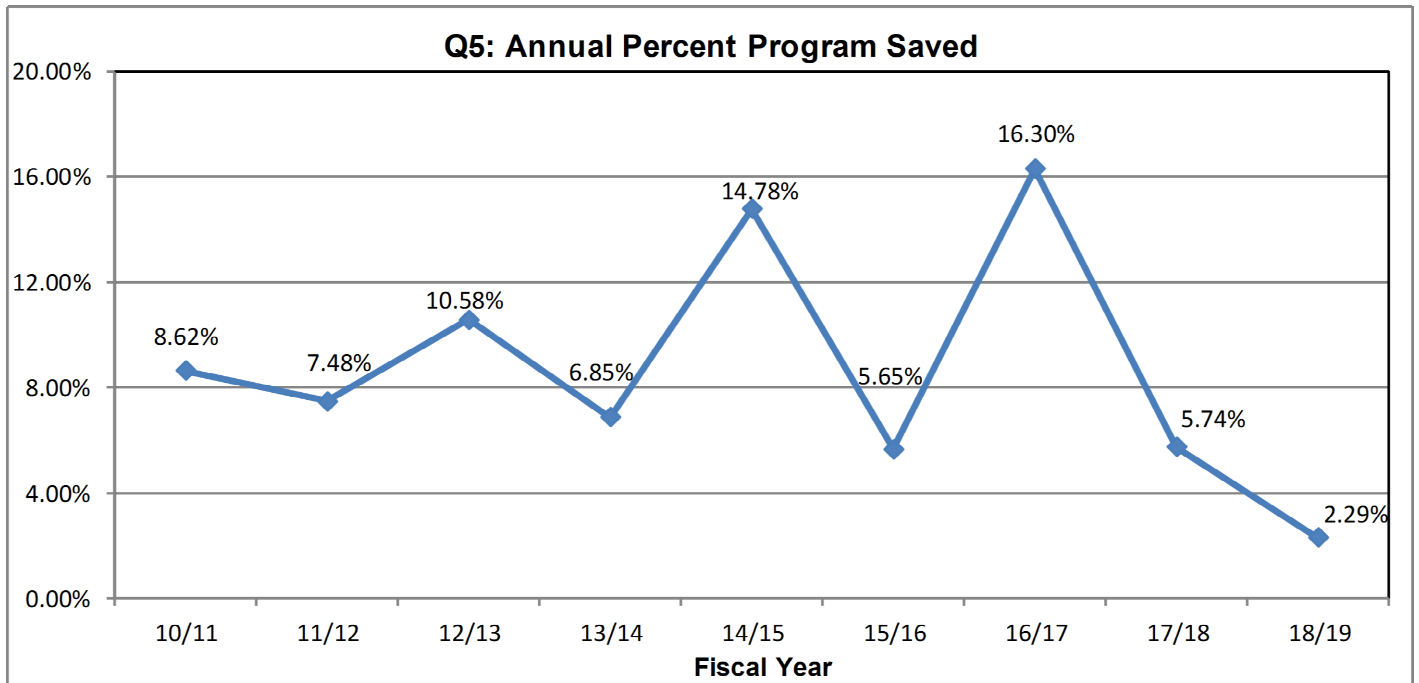


Q4: Percent Project Saved
Annual Report Fiscal Year 2018/2019



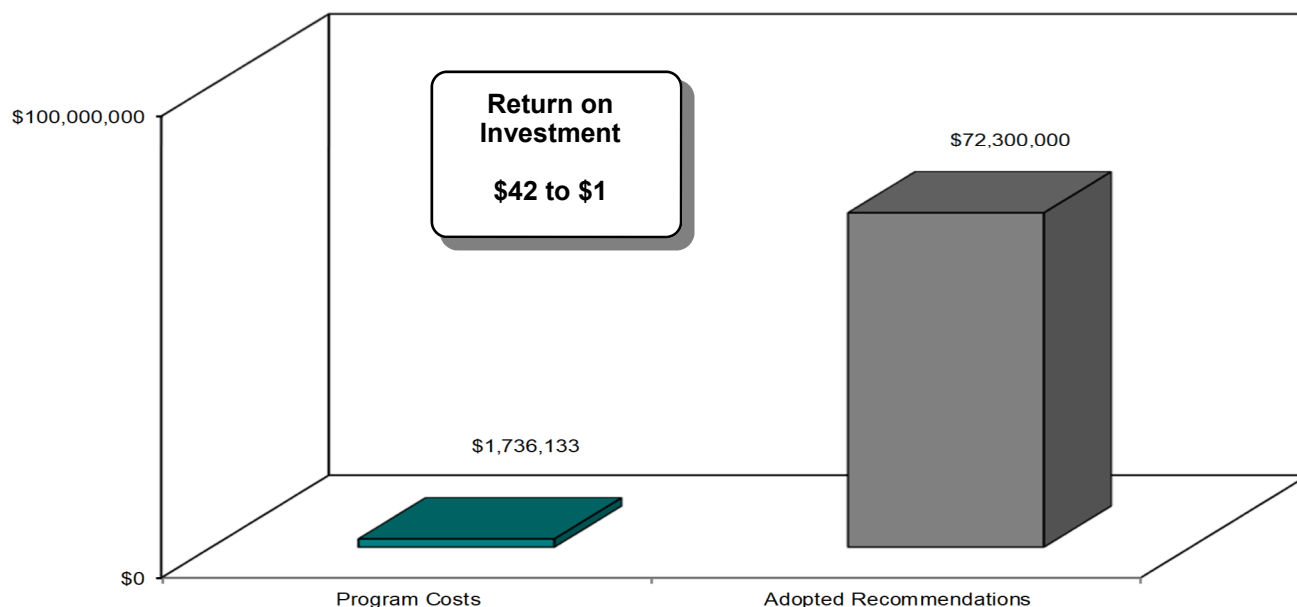
Percent Program Saved

The intent of the Percent Program Saved measure is to compare the cost avoidance/savings to the overall work program. The measure is calculated by dividing the three year average monthly lettings into the overall cost avoidance/savings.

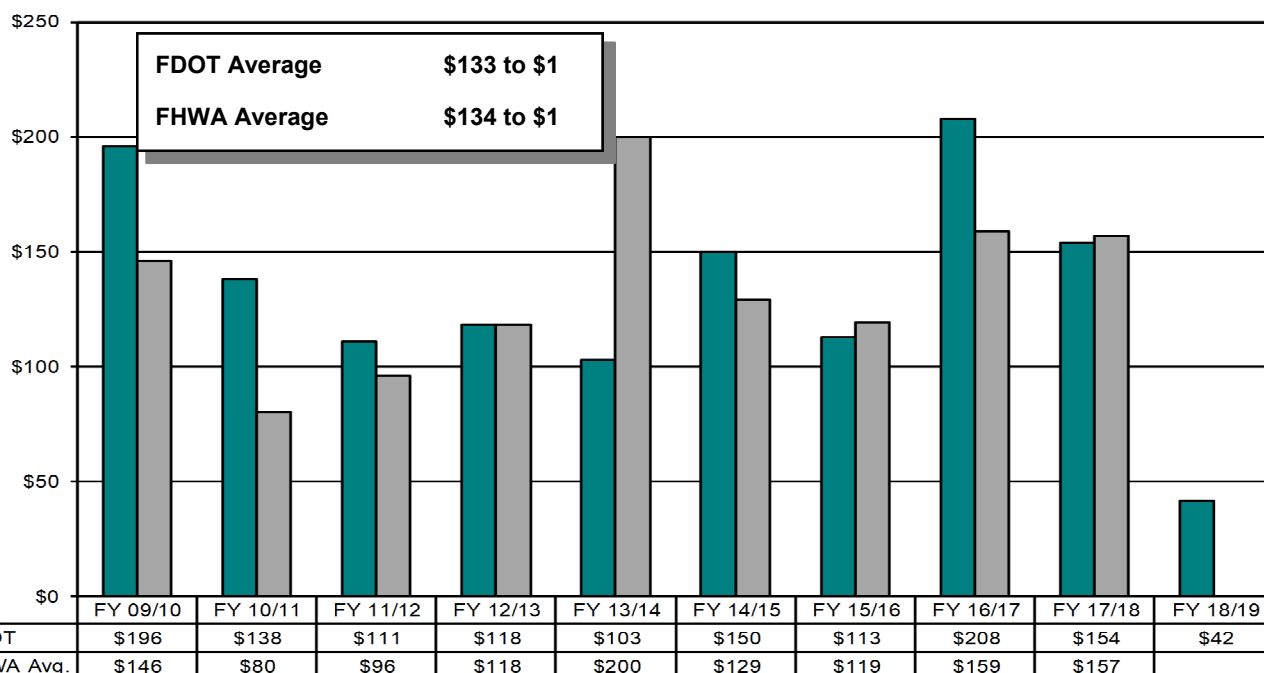


Return on Investment

Q6: Return on Investment
Annual Report Fiscal Year 2018/2019



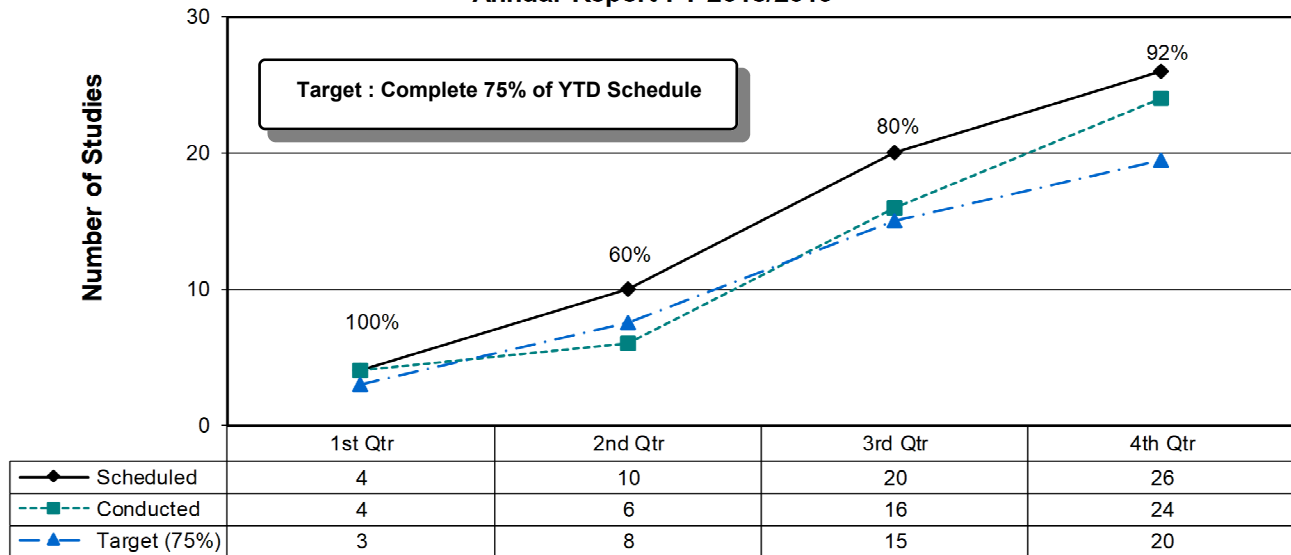
Annual Return on Investment



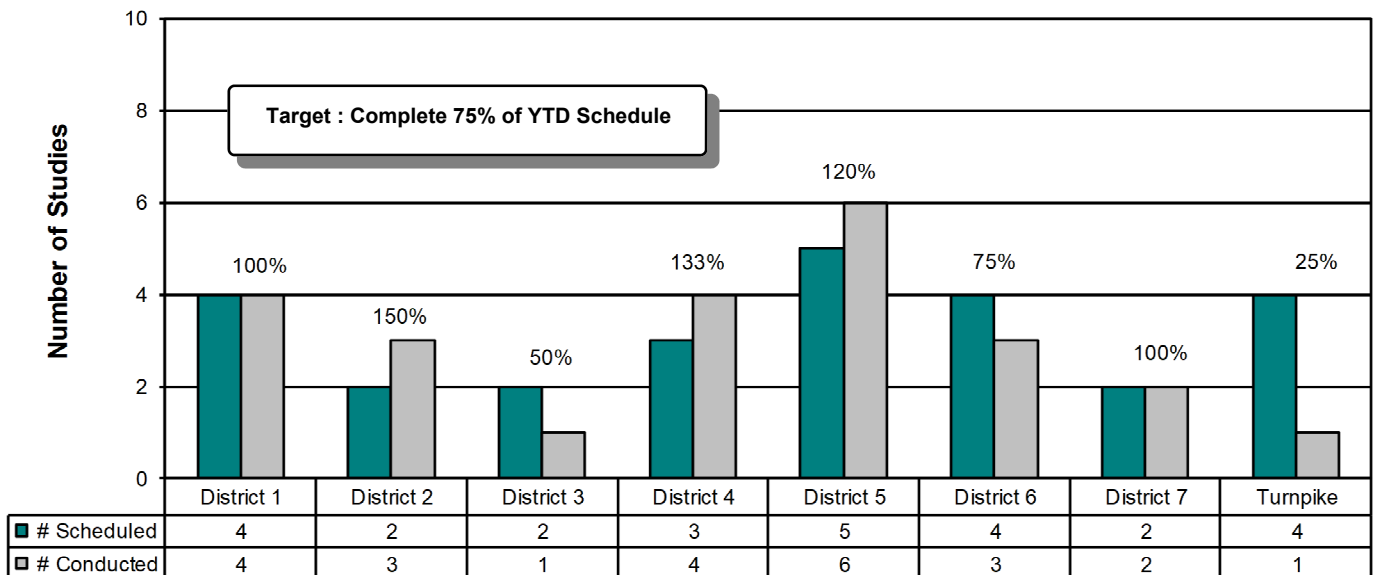
* FHWA data for fiscal year 2018/2019 was not available at time of publication.

Work Plan Completion

P1: VE Studies Scheduled vs. Completed
Annual Report FY 2018/2019

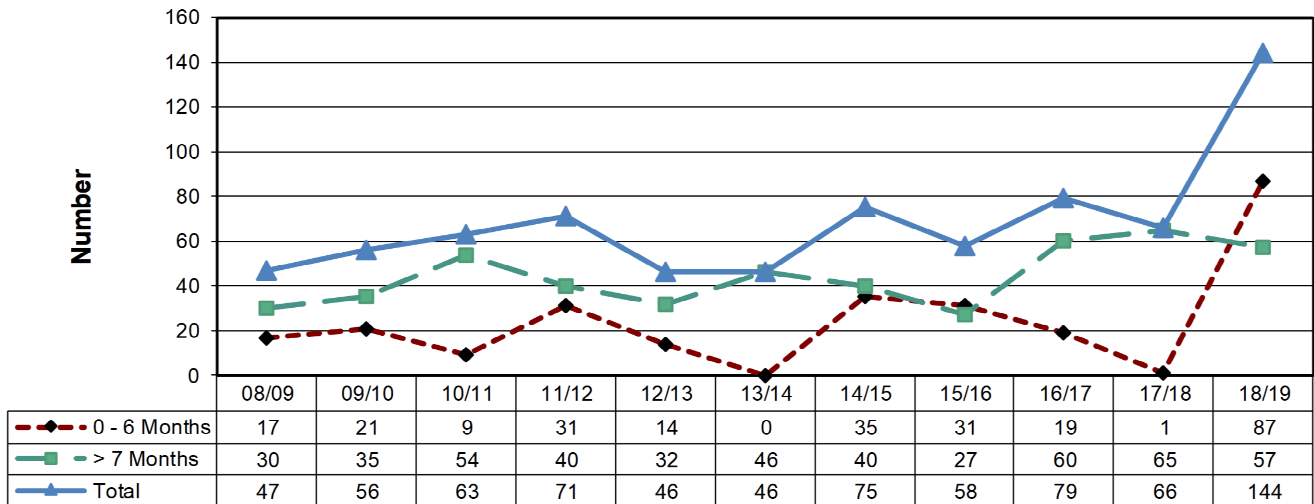


P1: VE Studies Scheduled vs Completed
Annual Report FY 2018/2019

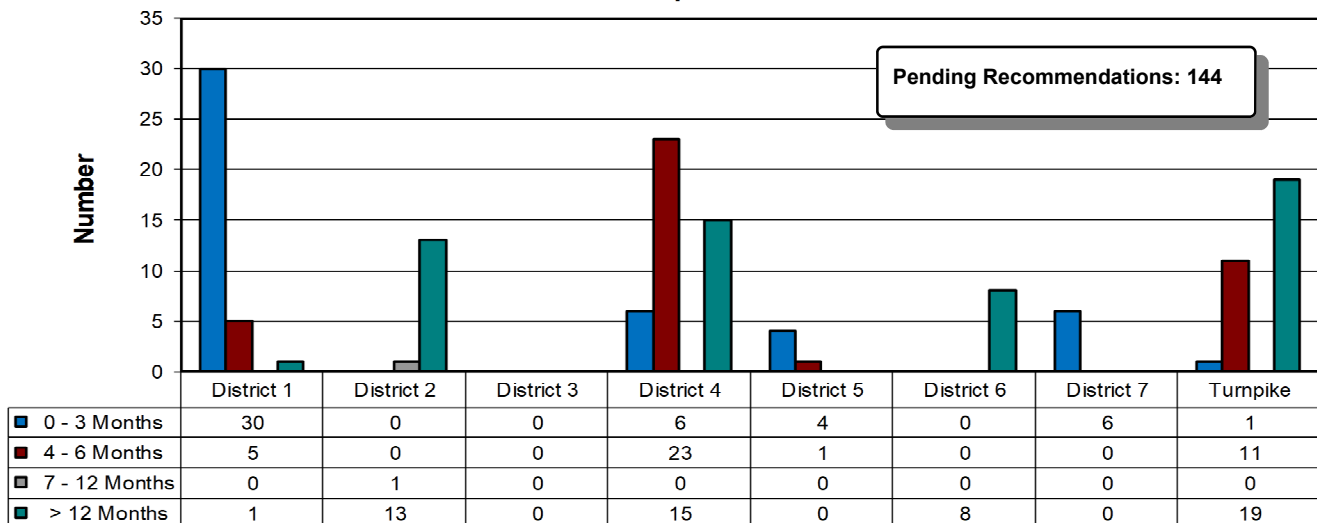


Pending Recommendations

P2: Annual # Pending Recommendations
Annual Report FY 2018/2019



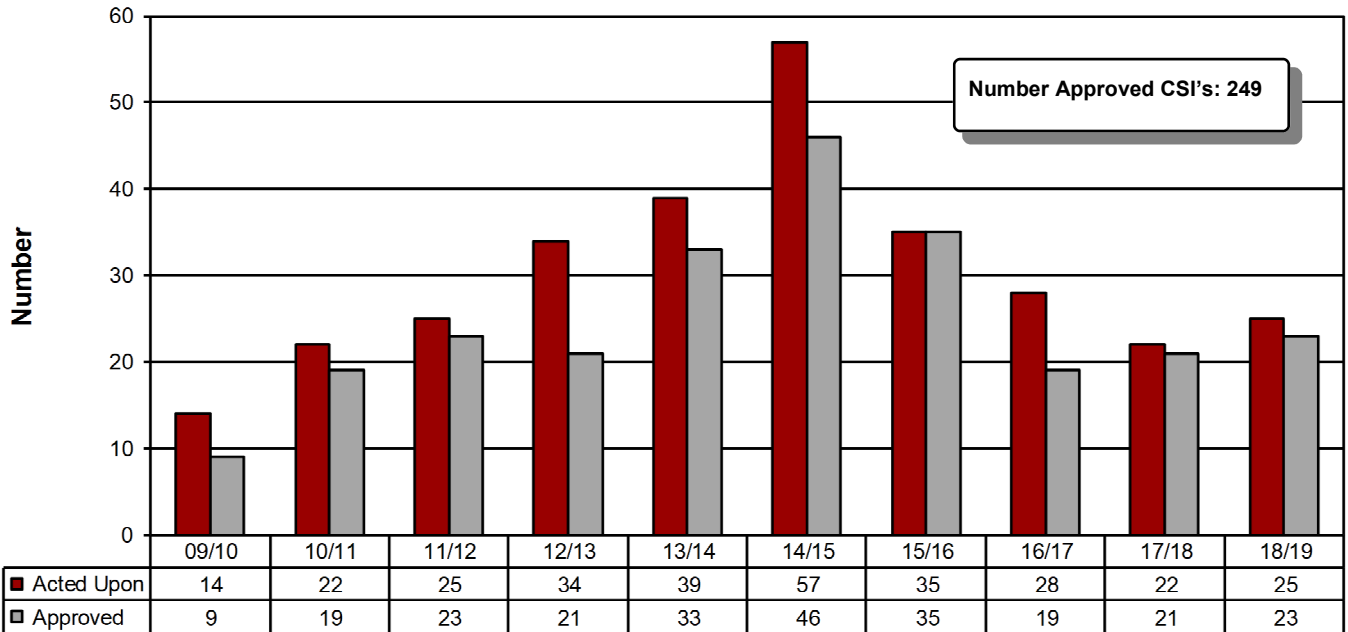
P2: # Pending Recommendations
Annual Quarter Report FY 2018/2019



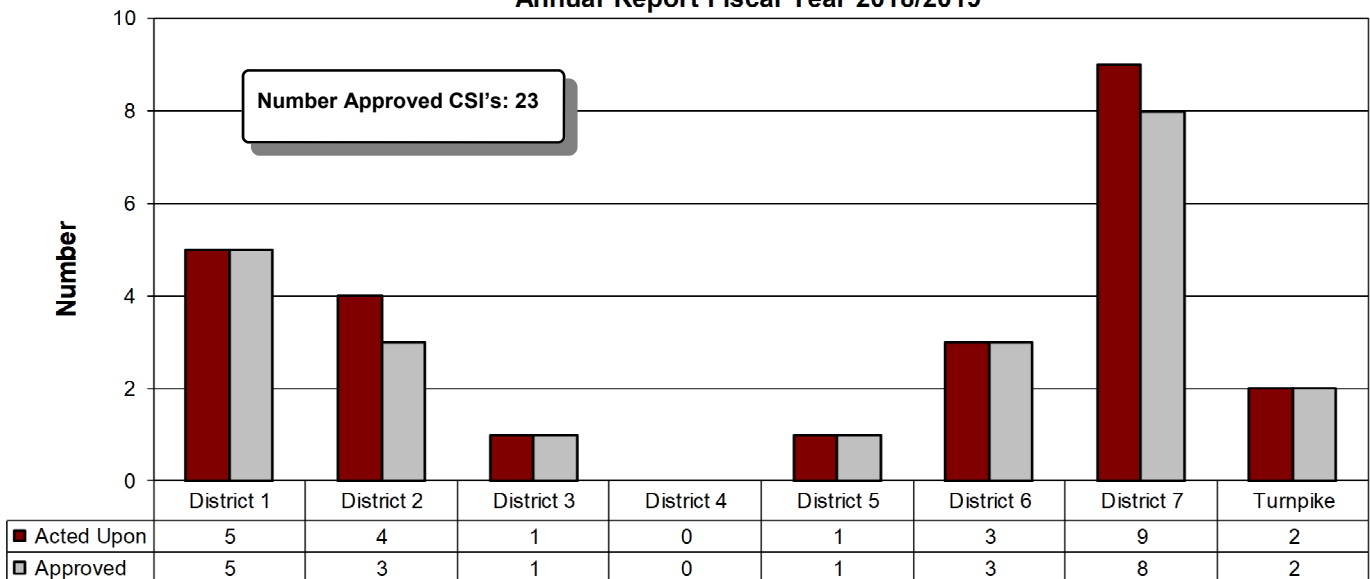
**Fiscal Year 2018/2019
Cost Savings Initiative
Performance Measures**

CSI Summary

Q1: Annual CSI Acted Upon



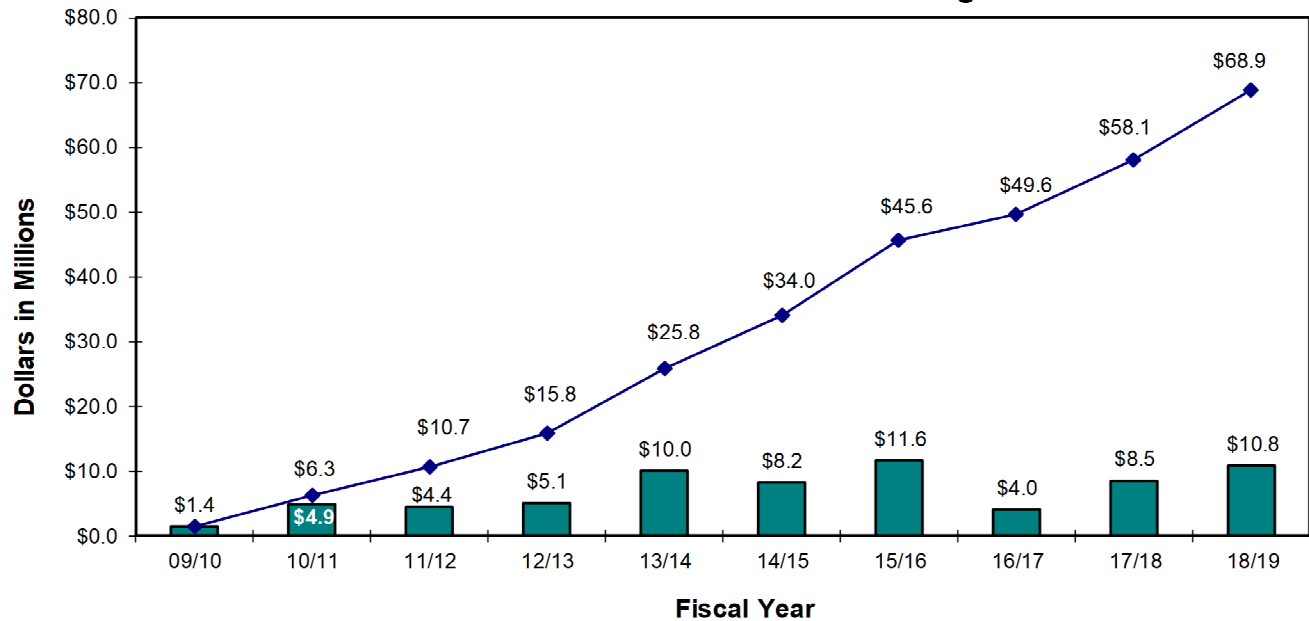
**Q1: CSI's Acted Upon
Annual Report Fiscal Year 2018/2019**



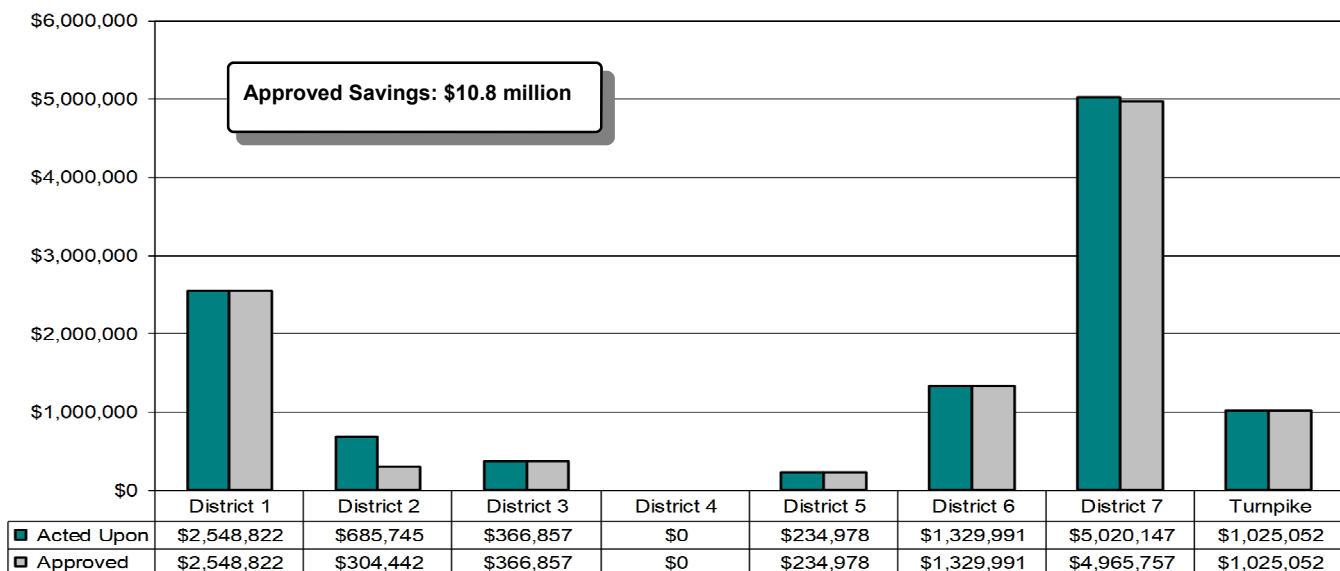
* Prior to fiscal year 2010/2011, Cost savings Initiatives (CSI) were formerly referred to as Value Engineering Change Proposals (VECP's).

CSI Approved Savings

Q2: Cumulative CSI Construction Cost Savings

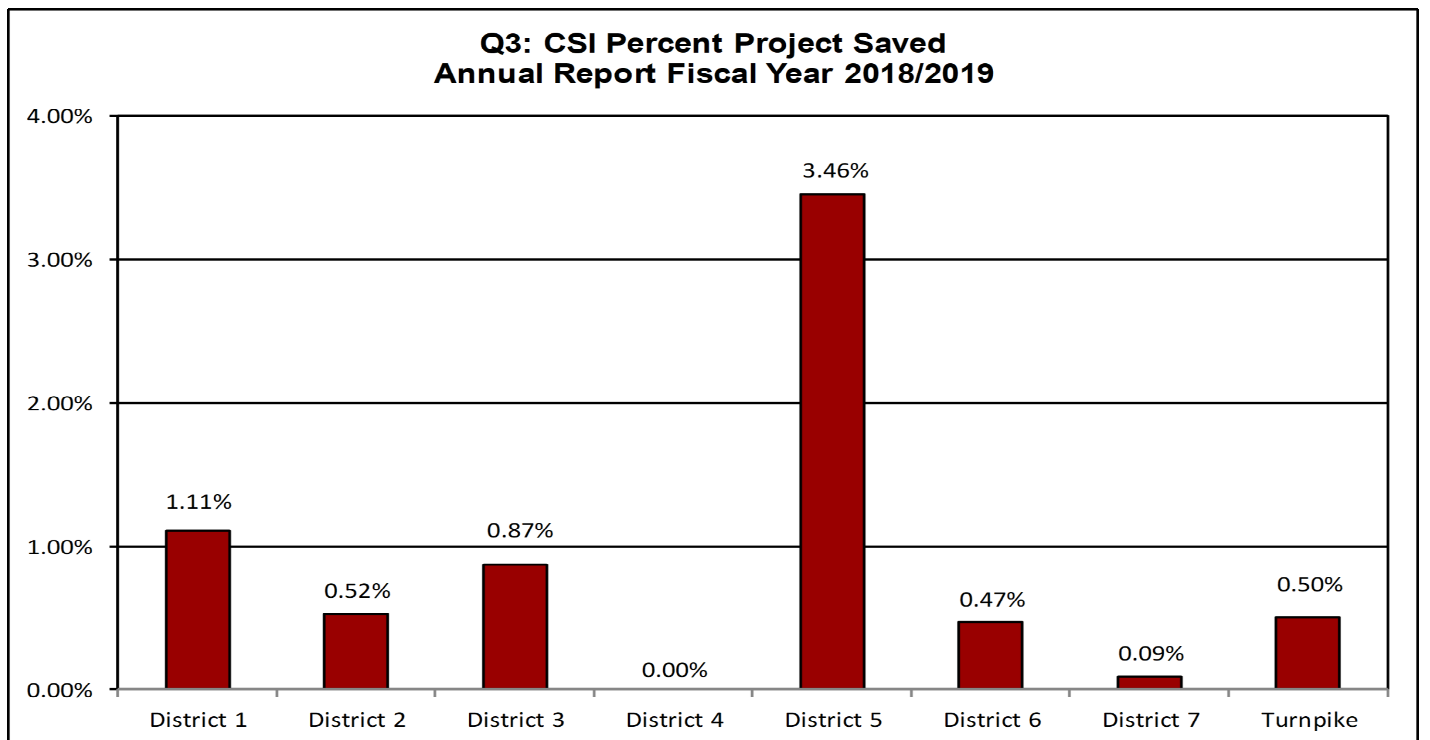
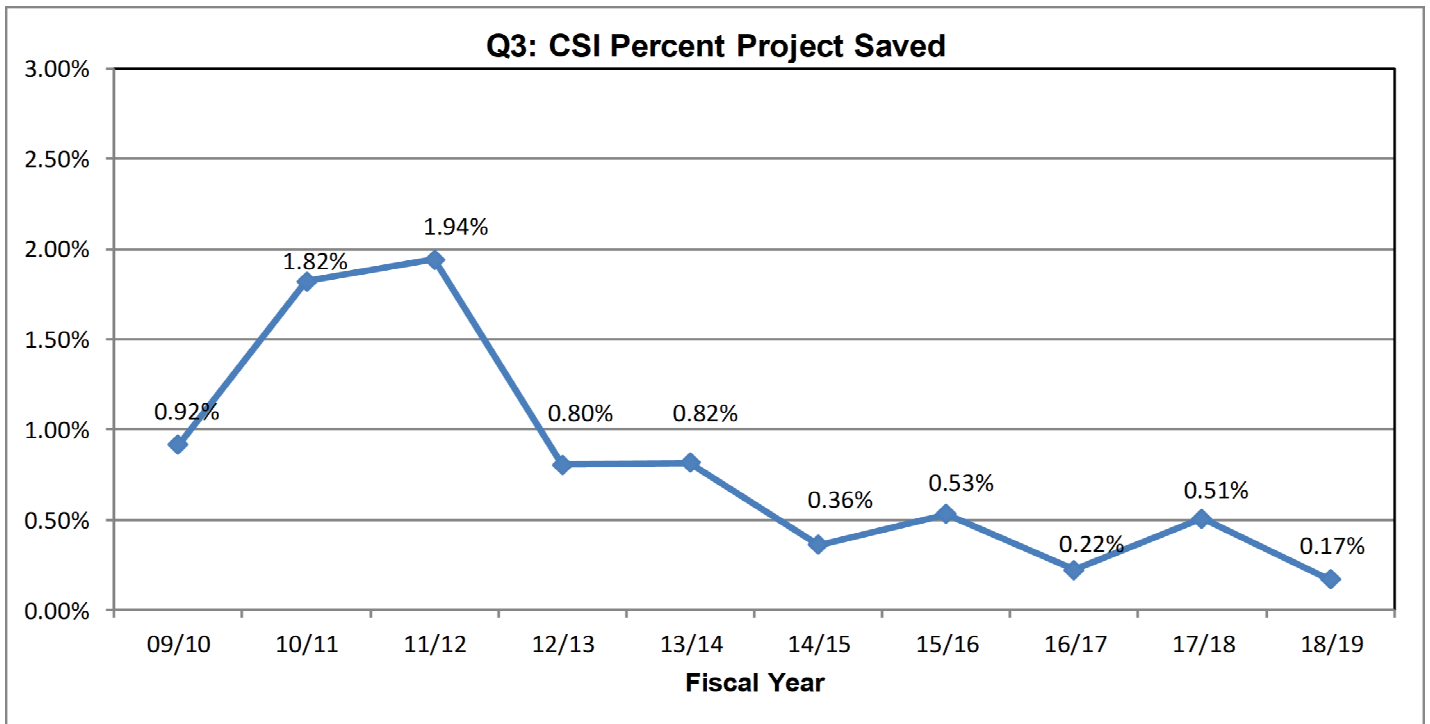


Q2: Approved CSI Savings
Annual Report Fiscal Year 2018/2019



* Prior to fiscal year 2010/2011, Cost savings Initiatives (CSI) were formerly referred to as Value Engineering Change Proposals (VECP's).

CSI Percent Project Saved

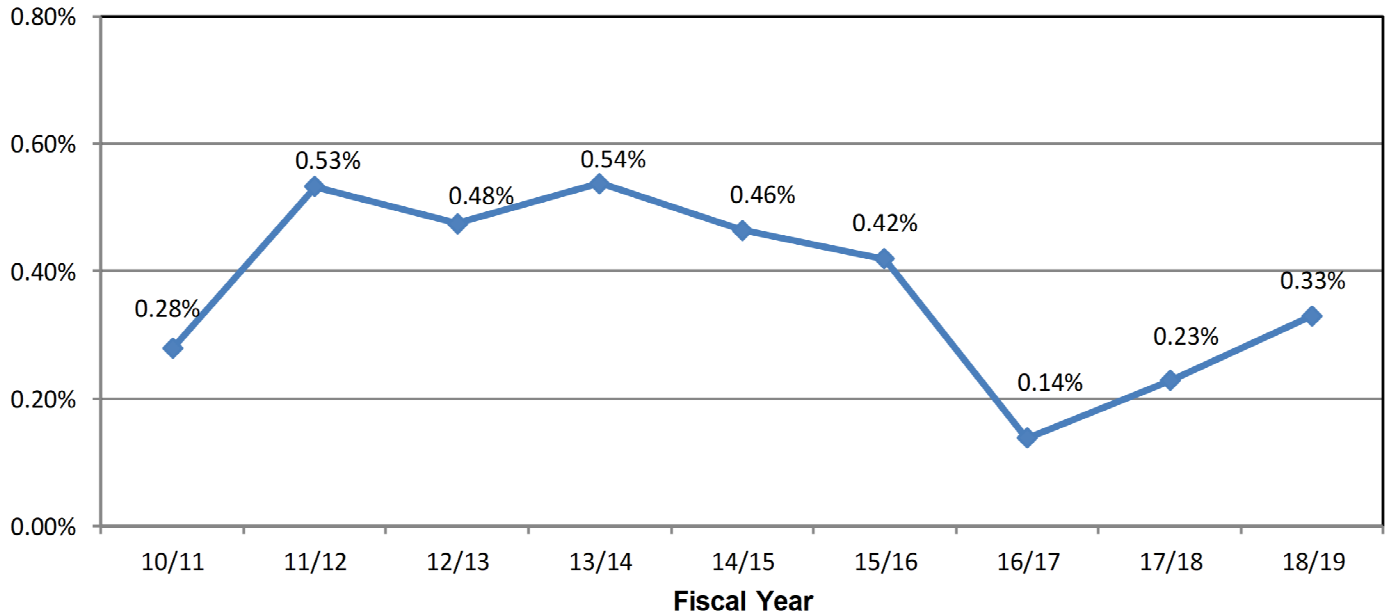


* Prior to fiscal year 2010/2011, Cost savings Initiatives (CSI) were formerly referred to as Value Engineering Change Proposals (VECP's).

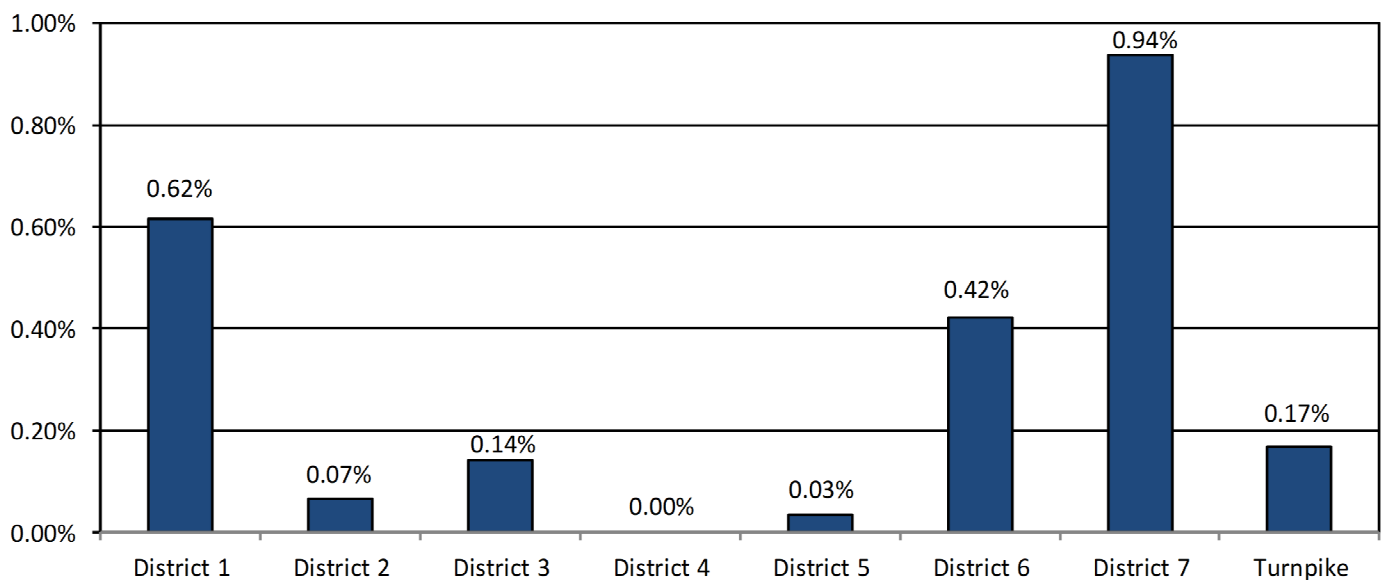
CSI Percent Program Saved

The Percent Program Saved is a new measure. The intent is to compare the cost avoidance/savings to the overall work program. The measure is calculated by dividing the three year average monthly lettings into the overall cost avoidance/savings.

Q4: CSI Percent Program Saved



**Q4: CSI Percent Program Saved
Annual Report Fiscal Year 2018/2019**



Appendix Process Control Systems

Process Control System

Process Control System																																																																																																																																																																																																																																																																																																																																																																									
Process Name: Value Engineering Program			Product/Service: Perform Value Engineering analysis on selected projects and document findings			Primary Customers: Management Regulators: FHWA		Customer's Valid Requirement(s): Effective use of resources to produce a quality transportation system.		Regulator's Valid Requirement(s): Projects that meet the requirements of 23 CFR 627 have a VE Analysis conducted in accordance with 23 CFR 627.		Miscellaneous Information																																																																																																																																																																																																																																																																																																																																																													
Input(s): Projects Supplier(s): Work Program			Flow Chart					Process and Quality Measures (QA/QC)			Checking / Measurement Monitoring		Miscellaneous Information																																																																																																																																																																																																																																																																																																																																																												
Dept / Person		DISTRICT VALUE ENGINEER	VALUE ENGINEERING TEAM		STATE VALUE ENGINEER			Process Measures	Control Limits And Specs / Targets	Checking Item	Timeframe (Frequency)	Responsibility Who will check?	QAR Date of Last Review	Miscellaneous Information																																																																																																																																																																																																																																																																																																																																																											
Step / Time																																																																																																																																																																																																																																																																																																																																																																									
PROJECT SELECTION								P1	% scheduled studies completed	75%	VER & Work Plan	Monthly	SVE	D1: 12009 C	Federal Regulation 23 CFR 627																																																																																																																																																																																																																																																																																																																																																										
								P2	# of pending rec. per time period		VER	Monthly	SVE	D2: 11/2015 C	VE Procedure 625-030-002																																																																																																																																																																																																																																																																																																																																																										
TEAM SELECTION								Q1	\$\$\$ saved per time period		VER	Monthly	SVE		AASHTO Guidelines for VE																																																																																																																																																																																																																																																																																																																																																										
								Q2	Value Added \$\$\$\$ per time period		VER	Monthly	SVE	D3: 12009 C	NCHRP Synthesis 352 – Value Engineering Applications in Transportation																																																																																																																																																																																																																																																																																																																																																										
STUDY								Q3	Adoption Rate	40%-60%	VER	Monthly	SVE	D4:11/2015 C																																																																																																																																																																																																																																																																																																																																																											
								Q4	Percent Project Saved	5%	VER	Monthly	SVE	D5: 12009 C																																																																																																																																																																																																																																																																																																																																																											
RESOLUTION								Q5	Percent Program Saved	2%	VER	Monthly	SVE	D6: 12/2015 C																																																																																																																																																																																																																																																																																																																																																											
								Q6	Return on Investment	\$130 to \$1	VER	Annual	SVE	D7:12009 C	TPK: 1/2016 C																																																																																																																																																																																																																																																																																																																																																										
REPORTING																																																																																																																																																																																																																																																																																																																																																																									

Approved: _____ Date: _____ Process Owner: State Value Engineer Rev #: 1.6 Rev Date: 3/2016

Process Control System

Process Control System									
Process Name: Value Engineering Project Selection		Product/Service: Develop a Value Engineering Work Plan by July 1 of each fiscal year.		Primary Customers: District Management, State Value Engineer. Partners: FHWA		Valid Requirements(s): All projects with the most potential for improvement have a VE Analysis.		Regulator's Valid Requirement(s): All projects on the NHS system with estimated total costs > \$25 million have a VE analysis	
Inputs: Projects Supplier(s): Work Program		Flow Chart				Process and Quality Indicators		Checking / Indicator Monitoring	
Dept / Person Step / Time		DISTRICT VALUE ENGINEER		DISTRICT MANAGEMENT		Process Indicators		Control Limits	
NEED		Develop VE Work Plan		Review projects in production pipe line.		Quality Indicators		Specs / Targets	
REVIEW		Meet Federal requirement?		Project a good candidate?		100% % work plans approved by July 1 P1		100%	
		YES		NO		or % scheduled studies completed O1		75%	
		Project Costs > \$25 million?		YES		Work Plan Received		Annual	
		NO		YES		VER & Work Plan		Quarterly	
		Review project		Grant Waiver?		Written waiver from Director of Transportation Development to DVE		D1: 1/2009 C	
		YES		NO				D2: 11/2015 C	
		VE window in this fiscal year?		YES				D3: 1/2009 C	
		NO		YES				D4: 11/2015 C	
		Add project to Candidate List		all projects been reviewed?				D5: 1/2009 C	
		YES		NO				D6: 12/2015 C	
DRAFT		Draft Work Plan		Submit work plan approval				D7: 1/2009 C	
APPROVAL		Is work plan acceptable?		Approve work plan and return to DVE				TPK: 1/2016 C	
		YES		NO					
DISTRIBUTE		Send copy of plan to SVE		Compile plans and publish on SharePoint					
		P1							
EXECUTE		Execute work plan							

Approved: _____ Date: _____ Process Owner: District Value Engineer Rev #: 1.6 Rev Date: 3/2016

Process Control System

Process Control System																										
Process Name: Value Engineering Team Selection			Product/Service: Team with the necessary skills and experience to conduct a value engineering analysis		Primary Customers: Team Leaders & Team Members		Valid Requirement(s): Team makeup has the required disciplines, leadership skills and VE experience to study the selected project.		Regulator's Valid Requirement(s): Multi-disciplined team of individuals not personally involved in the design of the project		Miscellaneous Information															
Input(s): Project disciplines Supplier(s): Department Heads, Consultants			Flow Chart				Partner: FHWA & Project Manager		Process and Quality Indicators		Checking / Indicator Monitoring															
Dept / Person Step / Time			DISTRICT VALUE ENGINEER		DEPARTMENT HEAD		STATE VALUE ENGINEER		Process Indicators		Control Limits		Checking Item		Timeframe (Frequency)		Responsibility		Date of Last Review		Miscellaneous Information					
NEED													Quality Indicators		Specs / Targets		What is to be checked?		When to check?		Who will check?		D1: 11/2006 C		Federal Regulation 23 CFR 627	
CONSULTANT REQUESTS			01										0		VER & VE Study Report		Annual		SVE		VE Procedure 625-030-002					
			02										0		VER & VE Study Report		Annual		SVE		AAASHTO Guidelines for VE					
			03										0		VER, VE study report, SAVE, FLPE, ITRESS		Annual		SVE		NCHRP Synthesis 352 – Value Engineering Applications in Transportation					
TEAM SELECTION																					D6: 1/2007 C					
																							D6: 12/2015 C			
																							D7: 11/2006 C			
NOTIFICATION																					TPK: 1/2016 C					
																							CODES:		C- Compliance NC – Noncompliant BP Best Practice	

Approved: _____ Date: _____ Process Owner: District Value Engineer Rev #: 1.5 Rev Date: 3/2016

Process Control System

Process Name: Conduct Value Engineering Study		Product/Service: Completed VE Analysis with a report documenting the findings of the team.		Primary Customers: Management & DVE. Partners: FHWA, State Value Engineer		Customer's Valid Requirement(s): Follow the VE Job Plan to produce quality recommendations that can be implemented.		Regulator's Valid Requirement(s): Follow widely recognized systematic problem solving process that is used throughout private industry and government agencies.	
Input(s): Recommendations Supplier(s): VE Team		Flow Chart							
Dept / Person	DISTRICT VALUE ENGINEER		VALUE ENGINEERING TEAM		Control Limits And Specs / Targets		Checking / Indicator Monitoring		Miscellaneous Information
Step / Time	DISTRICT VALUE ENGINEER		VALUE ENGINEERING TEAM		Control Limits And Specs / Targets		Checking / Indicator Monitoring		Miscellaneous Information
NEED	Conduct VE Study		Information Phase - Gather information about project from Project Manager, Designer and anyone else familiar with the project, including objectives, costs, commitments, and constraints. - Obtain information about the present design from engineering reports, design plans, estimates, alternatives, etc. - Team identifies components and elements of high cost - Tools used during this phase include: Project Team Briefing, Site Visit and Pareto Analysis		Adoption Rate 40%-60%		SVE		Federal Regulation 23 CFR 627 VE Procedure 625-030-002 1999 AASHTO Guidelines for VE NCHRP Synthesis 352 - Value Engineering Applications in Transportation
INFORMATION			Function Analysis Phase: - Team analyzes the project and defines the project functions using a two word active verb/measurable noun technique - Team determines which functions can be improved, eliminated or combined - Team classifies remaining functions as either Basic or Secondary functions. - Tools used during this phase include: Random Function Identification, Function Analysis System Technique (FAST), Function Listing and Value Index						D1: 11/2006 C
FUNCTION ANALYSIS			Creative Phase: - Team generates alternative ideas to perform the project functions by using creative techniques, such as brainstorming techniques.						D2: 11/2015 C
CREATIVE			Evaluation Phase: - Team evaluates and selects the ideas with the greatest potential for development into fully supported recommendations. - Tools used during this phase include: Advantage and disadvantage comparison, evaluation matrix with weighted criteria.						D3: 12/2006 C
EVALUATION			Development Phase: - Team develops the ideas with the greatest potential value into fully supported recommendations by establishing costs and back-up documentation needed to convey the benefits of the developed ideas. - Tools used during this phase include: sketches, cost estimates, Life Cycle Cost Analysis and validation of data and other technical work.						D4: 11/2015 C
DEVELOPMENT			Presentation Phase: - Team presents its recommendations to management and appropriate staff with time allocated for question and answer. - Draft VE Study report is developed during the study as a step-by-step record.						D5: 12/2007 C
PRESENTATION			Enter data into VE database						D6: 12/2015 C
RESULTS									D7: 11/2006 C
									TPK: 1/2016 C
									CODES: C- Compliance NC - Noncompliant BP Best Practice

Approved: _____ Date: _____ Process Owner: District Value Engineer Rev #: 1.6 Rev Date: 3/2016

Process Control System

Process Name: Value Engineering Recommendation Resolution Process.		Product/Service: Resolution of VE Team Recommendations		Primary Customers: Project Manager, SVE Partners: FHWA		Customer's Valid Requirement(s): Recommendations are acted upon in a timely manner, but that a recommendation is acted upon based on information and not time.		Regulator's Valid Requirement(s): Process to approve or reject recommendations to ensure the prompt review of VE recommendations		Miscellaneous Information			
Input(s): Recommendations Supplier(s): VE Team		Flow Chart				Process and Quality Indicators		Checking / Indicator Monitoring		Miscellaneous Information			
Dept / Person Step / Time	DISTRICT VALUE ENGINEER		PROJECT MANAGER/ CONSULTANT		DISTRICT MANAGEMENT		Process Indicators Quality Indicators	Control Limits And Specs / Targets	Checking Item What is to be checked?	Timeframe (Frequency) When to check?	Responsibility Who will check?	QAR Date of Last Review	
NEED	<pre> graph TD A([Resolve Pending Recommendations]) --> B[Distribute Study report to project team and Decision Makers] B --> C{Recommendations resolved at presentation?} C -- YES --> D[Schedule Resolution Meeting] C -- NO --> E[Are Decision Makers Available] E -- YES --> F[Conduct meeting - Obtain Decisions (Adopt, Modify, Pending, Reject)] E -- NO --> G[Decisions Made?] F --> G G -- YES --> H[Update the database] G -- NO --> I[Escalate Decision Process] H --> J([Monitor Pending Recommendations]) </pre>						Adoption Rate (01)	40%-60%	VER	Monthly	SVE	D1: 11/2006 C	Federal Regulation 23 CFR 627 VE Procedure 625-030-002 1999 AASHTO Guidelines for VE NCHRP Synthesis 352 - Value Engineering Applications in Transportation
REVIEW							# of pending rec. per time period (02)		VER	Monthly	SVE	D2: 11/2015 C	
RESOLUTION MEETING												D3: 12/2006 C	
												D4: 11/2015 C	
												D5: 1/2007 C	
												D6: 12/2015 C	
												D7: 11/2006 C	
MONITOR												TPK: 1/2016 C	
							CODES: C- Compliance NC - Noncompliant BP - Best Practice						

Approved: _____ Date: _____ Process Owner: District Value Engineer Rev #: 1.6 Rev Date: 03/2016

Process Control System

Process Control System																	
Process Name : Value Engineering Reporting Process.			Product/Service: Report detailing the results of the Value Engineering Program		Primary Customers: Management. Partners: FHWA		Customer's Valid Requirement(s): Prepare accurate and reliable reports		Regulator's Valid Requirement(s): Report accurate results of the Value Engineering Program								
Inputs: Study Results Supplier(s): DVE			Flow Chart					Process and Quality Indicators		Checking / Indicator Monitoring		Miscellaneous Information					
Dept / Person Step / Time			STATE VALUE ENGINEER		DISTRICT VALUE ENGINEER			Process Indicators And Quality Indicators		Checking Item		Timeframe (Frequency)		Respon- sibility		QAR	
								Specs / Targets <td colspan="2">What is to be checked?<td colspan="2">When to check?<td colspan="2">Who will check?<td colspan="2">Date of Last Review</td></td></td></td>		What is to be checked? <td colspan="2">When to check?<td colspan="2">Who will check?<td colspan="2">Date of Last Review</td></td></td>		When to check? <td colspan="2">Who will check?<td colspan="2">Date of Last Review</td></td>		Who will check? <td colspan="2">Date of Last Review</td>		Date of Last Review	
NEED			Report the results of the VE program to management					P1 # of corrections				Monthly		SVE		D1: 11/2006 C	
MAINTAIN FILES			Enter data into VE database at conclusion of study Upload copy of final study report to VER					Q1 Monthly Report complete by Production Management Due Date				Monthly		SVE		D2: 11/2015 C	
			Prepare Draft Report & e-mail to Districts					Q2 Annual Report complete by July 30 th				Annual		SVE		D3: 12/2006 C	
DATA VERIFICATION			Review Draft Report					Q3 FHWA Annual Report to Division Office by Requested date				Annual		SVE		D4: 11/2015 C	
			Is Draft Report accurate?													D5: 1/2007 C	
			YES													D6: 12/2015 C	
			NO													D7: 11/2006 C	
			Correct database and notify SVE													TPK: 01/2016 C	
REPORT			Is this the Annual Report?														
			YES														
			Prepare Final Annual Report														
			Prepare Annual FHWA Report														
			Distribute Reports														
			NO														
			Send Monthly Report to Production Management Office														
			Present at Monthly Performance Meeting														

Process Control System

Process Name: Value Engineering Change Proposal		Product/Service: Resolution on submitted VECP by the contractor		Primary Customers: Management, Contractor Partners: FHWA		Customer's Valid Requirement(s): Review and either approve or reject the VECP in a timely manner.		Regulator's Valid Requirement(s): Program that encourages the use and resolution of VECP's during construction.					
Input(s): Contractor Submittal supplier(s): Contractor		Flow Chart						Checking / Indicator Monitoring		Miscellaneous Information			
Dept / Person Step / Time	CONTRACTOR RESIDENT ENGINEER DISTRICT VALUE ENGINEER DISTRICT CONSTRUCTION ENGINEER DISTRICT DIRECTOR OF OPERATIONS							Process and Quality Indicators Control Limits Specs / Targets Process Indicators Quality Indicators		Timeframe (Frequency) When to check? Checking Item What is to be checked? Respon-sibility Who will check? Date of Last Review		Abbreviations - Procedure - Reference - Notes, etc. Federal Regulation 23 CFR 627	
PRIOR TO BEGINNING OF CONTRACT TIME	(P1) # pending (P2) \$S pending (Q1) # added upon (Q2) \$S saved (Q3) % Project Saved (Q4) % Program Saved							Quarterly Quarterly Monthly Monthly Monthly Monthly		D1: 11/2006 D2: 12/2006 D3: 12/2006 D4: 5/2007 D5: 1/2007 D6: 5/2007 D7: 11/2006 TPK: 1/2007		C - Compliance NC - Noncompliant BP - Best Practices	
AFTER CONTRACT TIME BEGINS													
SUBMITTAL													
REVIEW													
NOTIFICATION													

Approved: _____ Date: _____ Process Owner: District Value Engineer Rev #: 1.6 Rev Date: 03/2016