

## RESULT DRIVER:

Eric Schroeter  
State Design Engineer

## MEASUREMENT

### DRIVER:

Doug Hood  
Planning and Programming  
Coordinator

## PURPOSE OF THE MEASURE:

The measure determines how close total project costs are to the programmed costs. The programmed cost is considered the project budget.

## MEASUREMENT AND DATA COLLECTION:

Completed project costs are reported during the fiscal year in which a project is completed. Road and bridge project costs include design, right-of-way purchases, utilities, construction, inspection and other miscellaneous costs. The programmed cost is based on the amount included in the most recently approved Statewide Transportation Improvement Program. Completed costs include actual expenditures. Multimodal and local public agency project costs typically reflect state and/or federal funds but not local funding contributed toward such projects.

The target for this measure is set by internal policy and will not change unless policy changes.

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## Percent of programmed project cost as compared to final project cost – 4a

Accurate program cost estimates help MoDOT deliver more timely improvements for taxpayers. As of December 31, 2017, 148 road and bridge projects were completed in fiscal year 2018 at a cost of \$399 million. This represents a deviation of 6.8 percent (or \$29 million) less than the programmed cost of \$428 million. Of the 148 road and bridge projects completed, 58 percent were completed within or below budget. In comparison, 50 percent of projects were completed within or below budget as of the same date a year ago. The largest component of project savings came from awards at \$22.7 million. Miscellaneous savings (right-of-way purchases, utilities and other costs) were \$14.8 million. There may be projects that have adjustments pending, which could cause a slight change in the final values.

In addition, 18 multimodal projects were completed at a cost of \$18.1 million, 7.9 percent or \$1.6 million less than the programmed cost of \$19.6 million. A total of 76 local public agency projects were completed at a cost of \$80.1 million, 8.2 percent or \$7.2 million less than the programmed cost of \$87.3 million.

The target is 0 percent difference, indicating MoDOT is making timely use of available funds. Road and bridge, multimodal and local public agency projects were within 8.2 percent of the target for projects awarded through the second quarter of FY 2018.

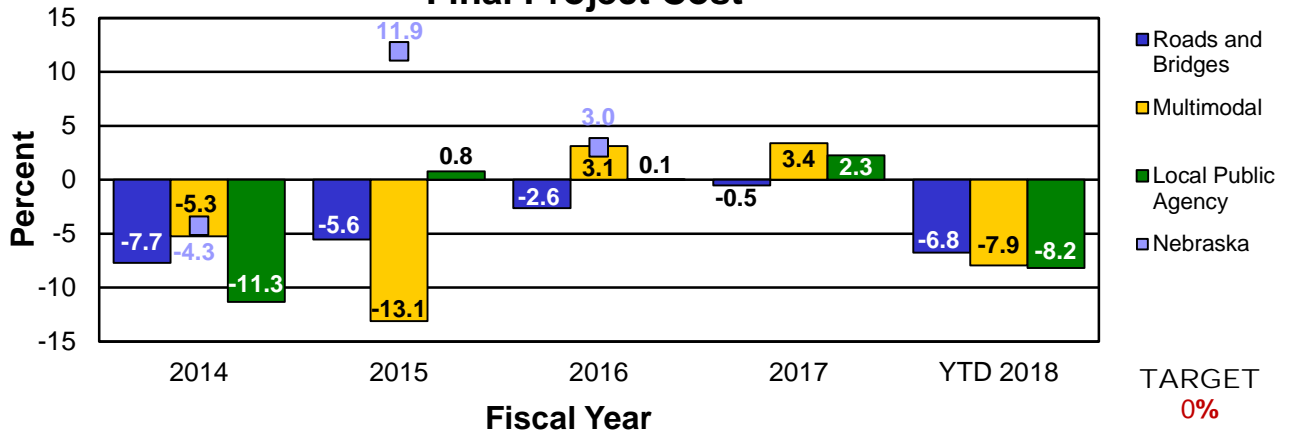
There was an adjustment to the final FY 2017 values, resulting in the multimodal percentage changing from 1.7 to 3.4 percent.

MoDOT uses this historical data as a guide for programming future projects. Projects awarded in FY 2016 and FY 2017 were about 8 percent lower than programmed values. If FY 2018 projects also reflect significant award savings, MoDOT plans to accelerate projects from FY 2019 to FY 2018.



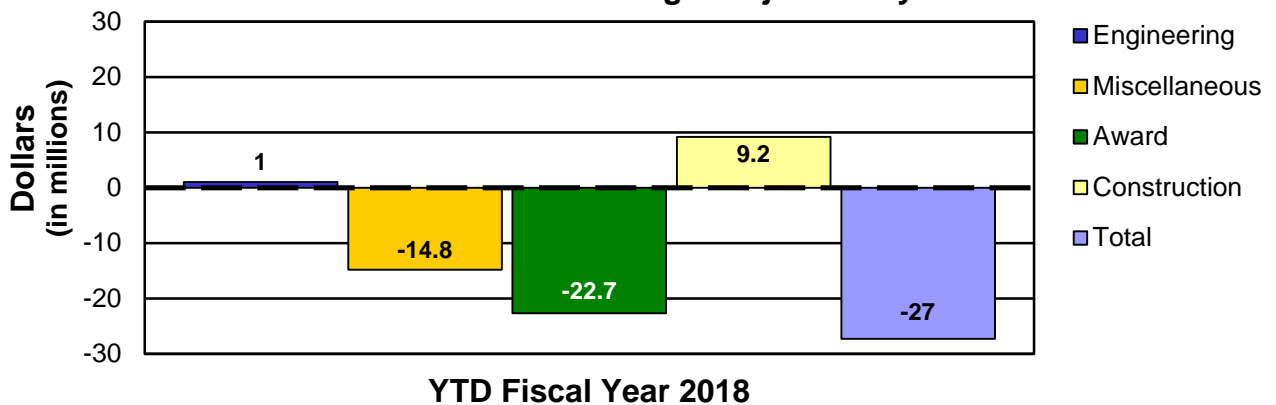
# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## Percent of Programmed Project Cost as Compared to Final Project Cost



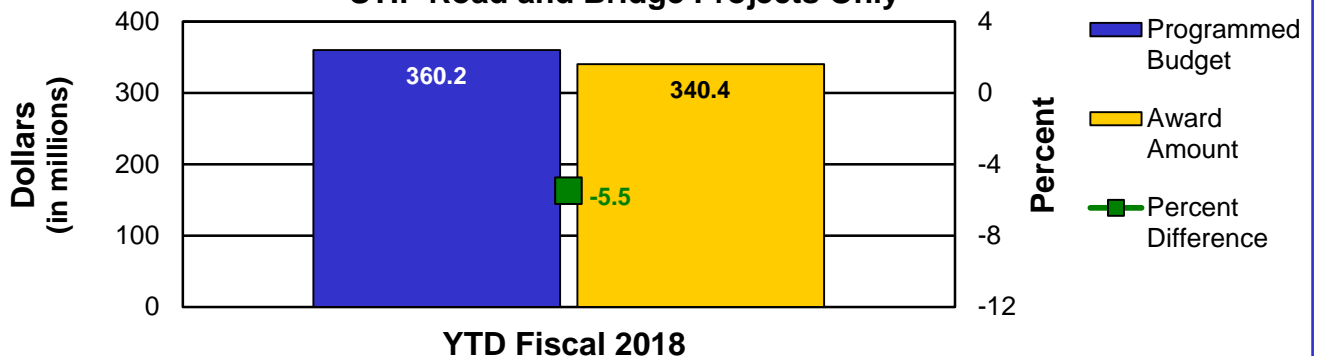
Positive numbers indicate the final (completed) cost was higher than the programmed cost.

## Final Project Cost Differences by Phase STIP Road and Bridge Projects Only



Negative numbers indicate savings. Miscellaneous includes right-of-way purchases, utilities and other costs.

## Difference in Program vs. Award STIP Road and Bridge Projects Only



Amounts include STIP road and bridge projects with two percent construction contingency applied.

**RESULT DRIVER:**  
Eric Schroeter  
State Design Engineer

## DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

**MEASUREMENT DRIVER:**  
Dan Oesch  
Field Materials Engineer

**PURPOSE OF THE MEASURE:**  
This measure tracks the percentage of road and bridge projects opened by the commitment date established in the contract. This commitment also includes local public agency projects and multimodal projects (rail, aviation, waterway and transit).

**MEASUREMENT AND DATA COLLECTION:**  
For road and bridge projects, the project manager collaborates with the project team to establish the project completion day which is specific to when the road or bridge project will be opened to the public so to eliminate a financial penalty. The resident engineer uses the SiteManager system to track and document the work. Local public agencies and multimodal agencies use staff or consultant resources to set contract completion dates and track performance.

The target for this measure was set by management directive.

### *Percent of projects completed on time – 4b*

MoDOT's customers expect transportation improvements to be completed and roadways opened quickly with minimal impact to their lives. Delivering projects by the contract completion date is the target for all projects and is considered a commitment to Missourians and drivers. Completing projects on time helps maintain credibility with Missourians, minimizes drivers' exposure to work zones and provides facilities in good condition that improve safety and reduce vehicle maintenance costs.

MoDOT works to meet the initial contract completion date by preparing accurate plans and quantities, setting aggressive but reasonable completion dates and setting liquidated damages to reinforce completion dates without undue bid risks. In the first and second quarters of fiscal year 2018, 77 percent of all closed-out projects were completed by their planned completion dates.

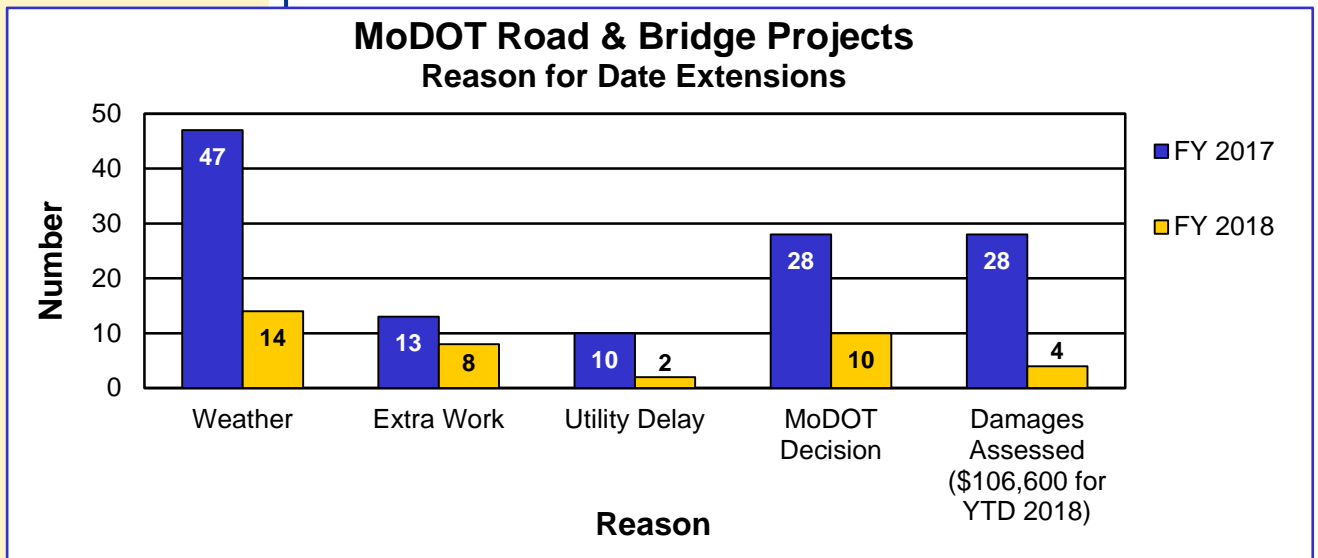
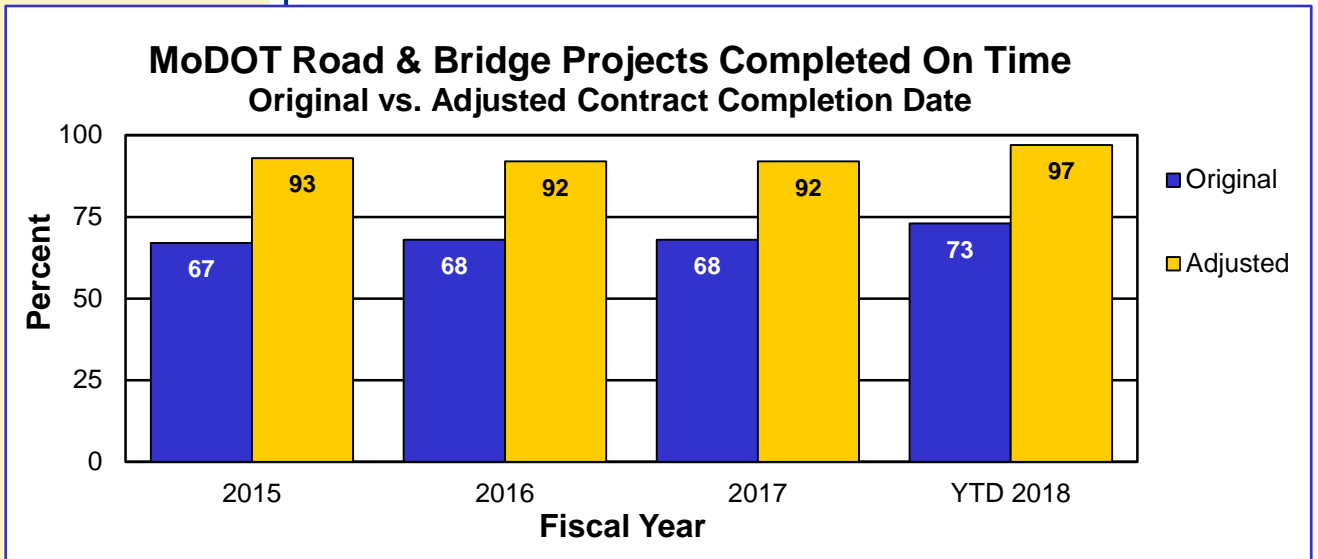
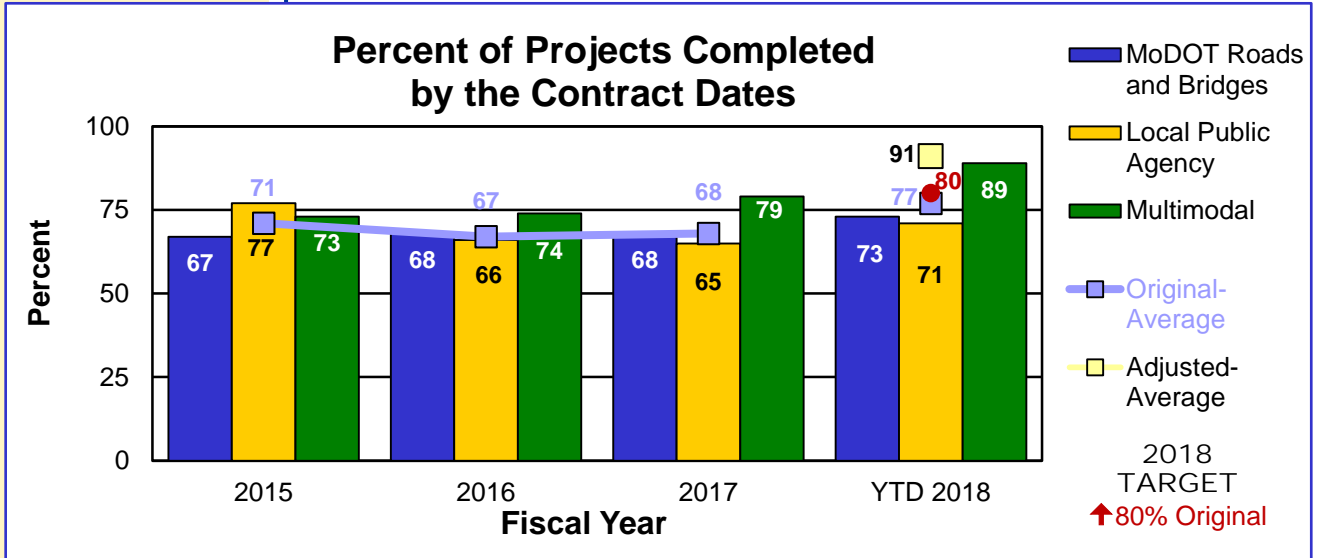
Sometimes, weather, additional work or a MoDOT directive necessitates an authorized extension of the completion date, without any financial assessment to the contractor. In the first two quarters of FY 2018, 91 percent of the closed-out projects were completed by the adjusted dates.

There are times when a contractor misses the contract completion date and the contractor is assessed damages. Of the road and bridge projects completed in the first and second quarter of FY 2018 that did not meet the original contract date, 37 percent were extended due to weather delays, 21 percent were extended due to extra work, 5 percent experienced utility delays, 26 percent were extended by MoDOT and 11 percent missed the completion date with damages assessed totaling \$106,600.

The target for this measure is to have at least 80 percent of projects completed by the original completion date. At the end of the first and second quarter of FY 2018, the average number of all contracts completed by the original completion date was 77 percent which is a nine percent improvement from the previous year.

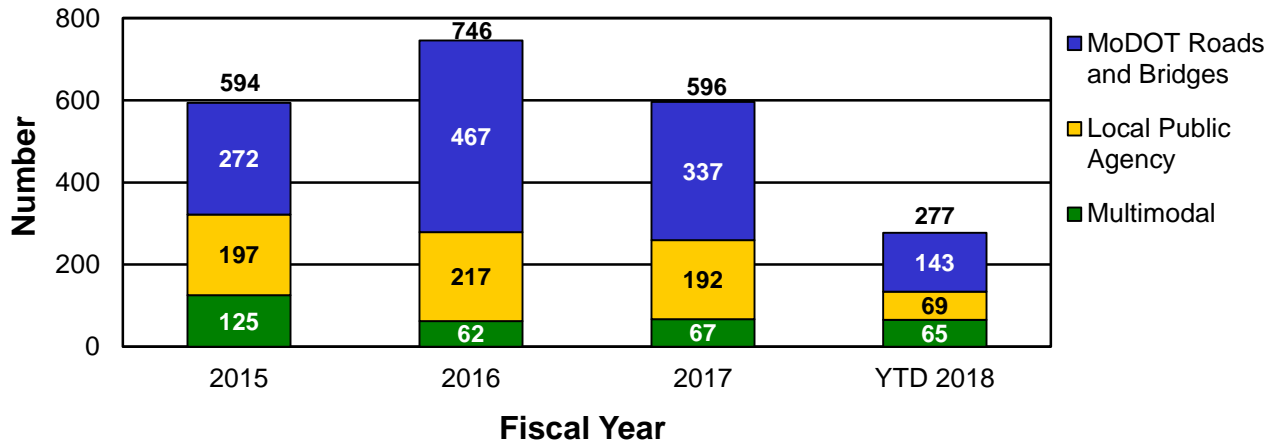


# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

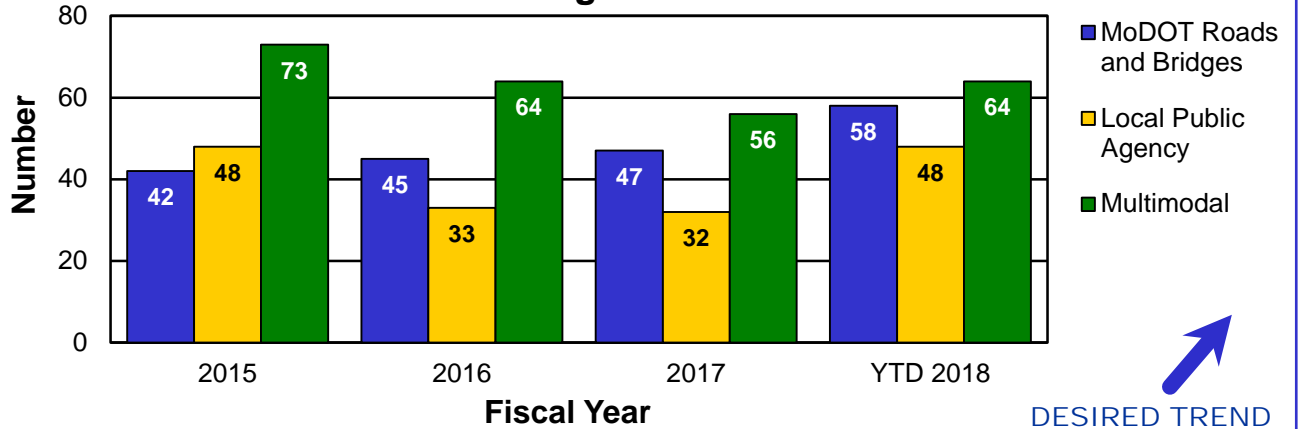


# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

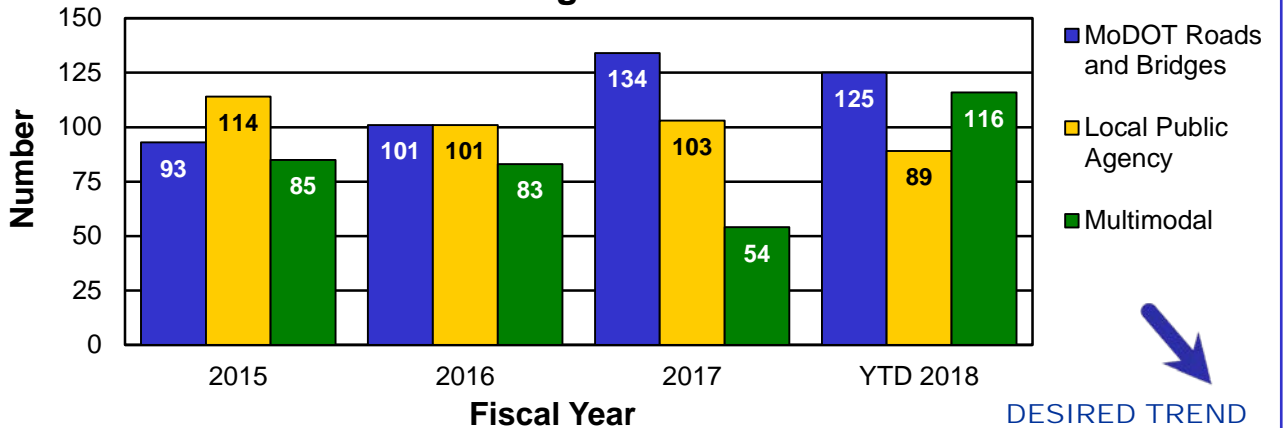
## Total Number of Projects Completed



## Average Number of Days Completed Before Original Date



## Average Number of Days Completed After Original Date





**RESULT DRIVER:**  
Eric Schroeter  
State Design Engineer

## DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

**MEASUREMENT DRIVER:**  
Lori Greer  
Field Materials Engineer

**PURPOSE OF THE MEASURE:**  
This measure tracks the percentage difference of total construction payouts to the original contract award amounts. This indicates how many changes are made on projects after they are awarded to the contractor for road, bridge, local public agency and multimodal projects – rail, aviation, waterway and transit.

**MEASUREMENT AND DATA COLLECTION:**  
For road and bridge projects, contractor payments are generated through MoDOT's SiteManager database and processed in the financial management system for payment. Change orders document the under-run/overrun of the original contract cost. Local public agencies and multimodal agencies use staff or consultant resources to set contract completion dates and track performance. The target for this measure is set by internal policy and will not change unless policy changes.

### *Percent of change for finalized contracts – 4c*

By limiting overruns on contracts, MoDOT can continue to keep its maintenance and construction commitments. This emphasis, combined with the use of practical design and value engineering, has contributed to limiting overruns on contracts. MoDOT's performance in the first two quarters of fiscal year 2018 is 1.4 percent over the award amount (\$5.2 million over the award amount of \$376 million worth of projects completed) with 57 percent of the projects being completed below the original award amount.

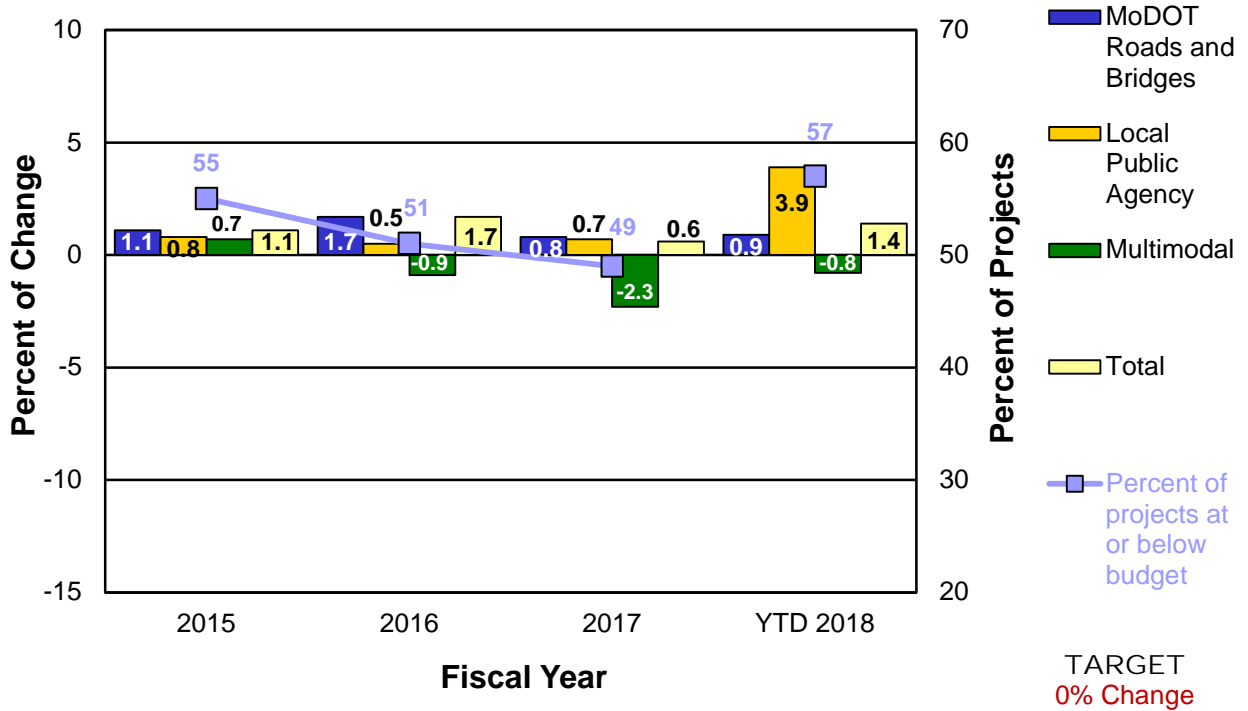
Many factors can affect the ability to complete a project within 2 percent of the award amount. These factors can include design changes, differing conditions, additional work items and administrative decisions.

For the first two quarters of FY 2018, MoDOT road and bridge projects were completed 0.9 percent over budget; local public agency projects were completed 3.9 percent over budget and multimodal projects were completed 0.8 percent under budget.

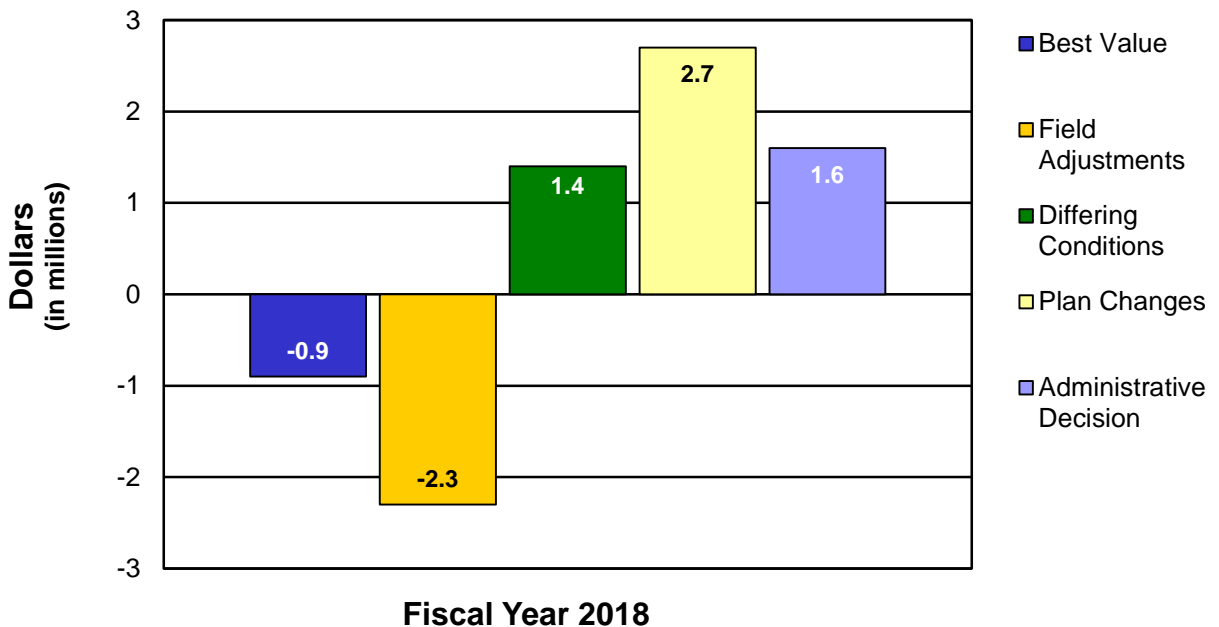


# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

**Percent of Change for Finalized Contracts  
Total Contractor Payment vs. Award Amount**



**Change Order Value by Reason  
(MoDOT Road and Bridge Projects Only)**



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Eric Schroeter  
State Design Engineer

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## *Innovative contracting methods – 4d*

MEASUREMENT DRIVER:  
David Simmons  
Design Liaison Engineer

PURPOSE OF THE MEASURE:  
This measure tracks the use of innovative contracting methods on MoDOT projects including: A + B contracts, alternate technical concept contracts, and design-build contracts.

MEASUREMENT AND DATA COLLECTION:  
MoDOT projects utilizing innovative contracting methods are reported during the fiscal year in which they are awarded. Contract award values are collected through MoDOT's bid opening summaries and project records.

A target of 10 percent of the programmed STIP, or two projects per year, is an appropriate target for utilizing innovative contracting methods in Missouri.

MoDOT has delivered over \$1.5 billion in Design-Build projects that have saved taxpayers over \$275 Million. When combined, these projects were completed more than 60 months ahead of schedule. MoDOT partners with the public and private sectors to deliver projects that maximize available resources into collaborative solutions that achieve goals. This effort challenges the way projects are delivered with innovation, speed and efficiency as driving forces. MoDOT pushes the boundaries to execute projects using innovative data-driven processes and a wide range of partnerships.

MoDOT evaluates project risks such as size (cost), type (preservation, rehabilitation or reconstruction), and complexity (opportunity for innovation and speed) when determining project delivery methods. The advantages of MoDOT's innovative contracting methods are as follows:

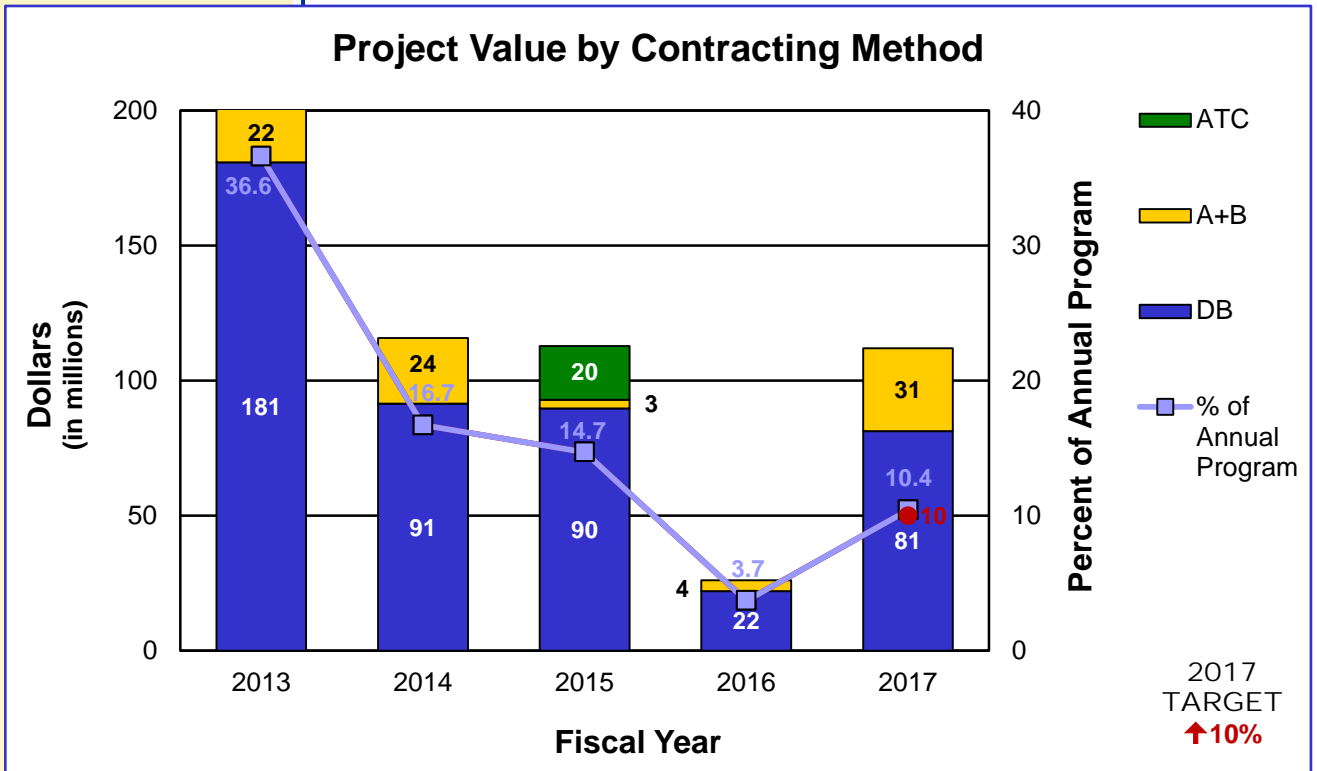
- DB contracts include design and construction under one contract, procured using a two-phased selection process. MoDOT scores proposals using a best-value or "build-to-budget" selection.
- Cost-plus-time bidding (A + B) aims to expedite project completion through competitive bidding on construction time (days).
- Alternate Technical Concepts (ATCs) give the contractor the opportunity to provide a more cost-effective alternative design prior to the bid. ATC discussions are held in a confidential environment which maximizes competitive bidding. The low bid is awarded the contract.

During this reporting period, DB projects were awarded in the St. Louis and Northeast Districts. The Safety Improvements DB Project was procured using a data-driven process to systematically target roadway improvements that are expected to save lives quickly and efficiently. The U.S. Route 54 Champ Clark Bridge was procured with Missouri as the lead, but in a unique bi-state partnership with Illinois as its first experience with DB.

Based on the 2017 STIP, MoDOT delivered five out of 402 projects statewide using innovative contracting methods. Two were delivered using DB and three were delivered using the A+B process. The two DB projects accounted for \$81.28 million of the \$776 million programmed budget (10.4 percent). This target was met for FY 2017 and has been exceeded four of the last five fiscal years.



# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE



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State Design Engineer

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## *Value engineering – 4e*

## MEASUREMENT DRIVER:

Sarah Kleinschmit  
Policy and Innovations Engineer

## PURPOSE OF THE MEASURE:

This measure tracks the use of value engineering during design and construction on traditional MoDOT projects including: value analysis during the design phase, construction value engineering proposals, and implementation of best practice into standards and policies.

## MEASUREMENT AND DATA COLLECTION:

Information on value analysis during design is gathered from MoDOT's Statewide Transportation Improvement Program information management system. The target for this measure is updated annually in October for the next fiscal year. This target is established by projecting a 10 percent improvement over a five-year average.

Construction value engineering change proposal information is gathered from MoDOT's Value Engineering Proposal database. Implementation of best practice progress is tracked by MoDOT staff.

The goal of value engineering (VE) is to build the right project at the right time, meeting the project need with the appropriate project scope. MoDOT uses the VE program to ensure the public receives great value for every tax dollar invested in Missouri's transportation system. MoDOT has been increasingly focused on smaller, maintenance-type projects that are not traditionally targeted by the VE program. Still, MoDOT must be innovative in using the VE process to search for solutions to reduce project costs and provide additional value.

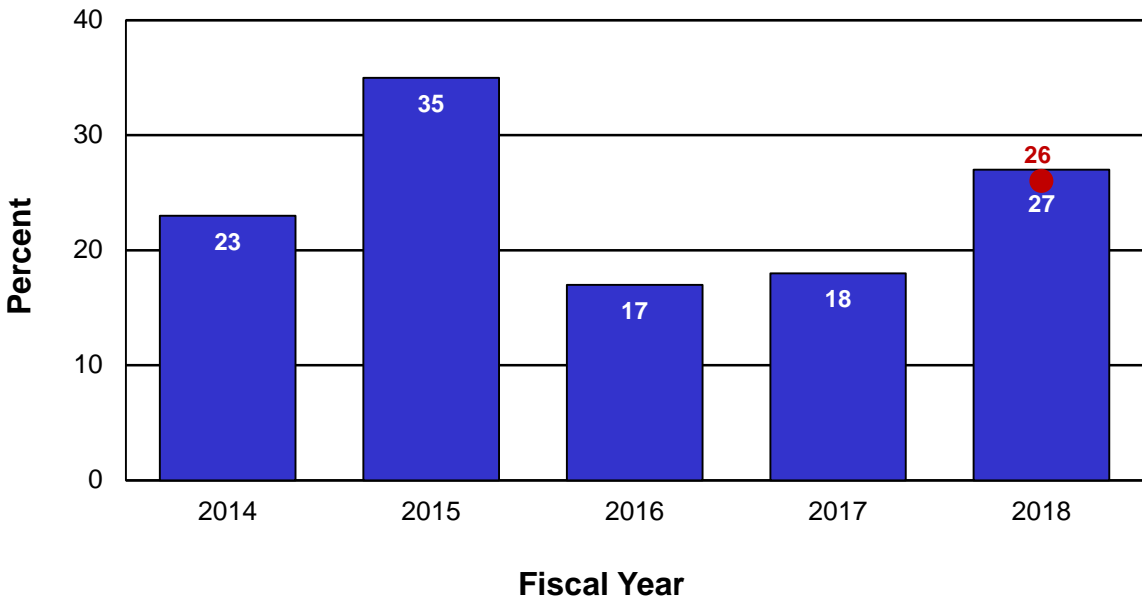
MoDOT uses design-phase value analysis to remove unnecessary scope, reduce project costs and improve project flexibility. For the first half of fiscal year 2018, 27 percent of applicable projects underwent some form of value analysis during design, which is on target for design-phase value analyses. Programmatic value analysis studies associated with the level-course and seal coat programs continue to account for the largest portion of this percentage. Districts continue to use the Practical Review Tool to add value and cost savings to projects.

MoDOT partners with industry to find more cost-effective solutions during the construction phase. Value Engineering Change Proposals (VECPs) engage contractor ideas to deliver improved projects. For the first half of FY 2018, five VECPs were approved resulting in a MoDOT savings of \$505,826. This represents a 56 percent approval rate. One Post-Award Value Engineering (PAVE) change proposal has resulted in a MoDOT cost savings of \$20,130.

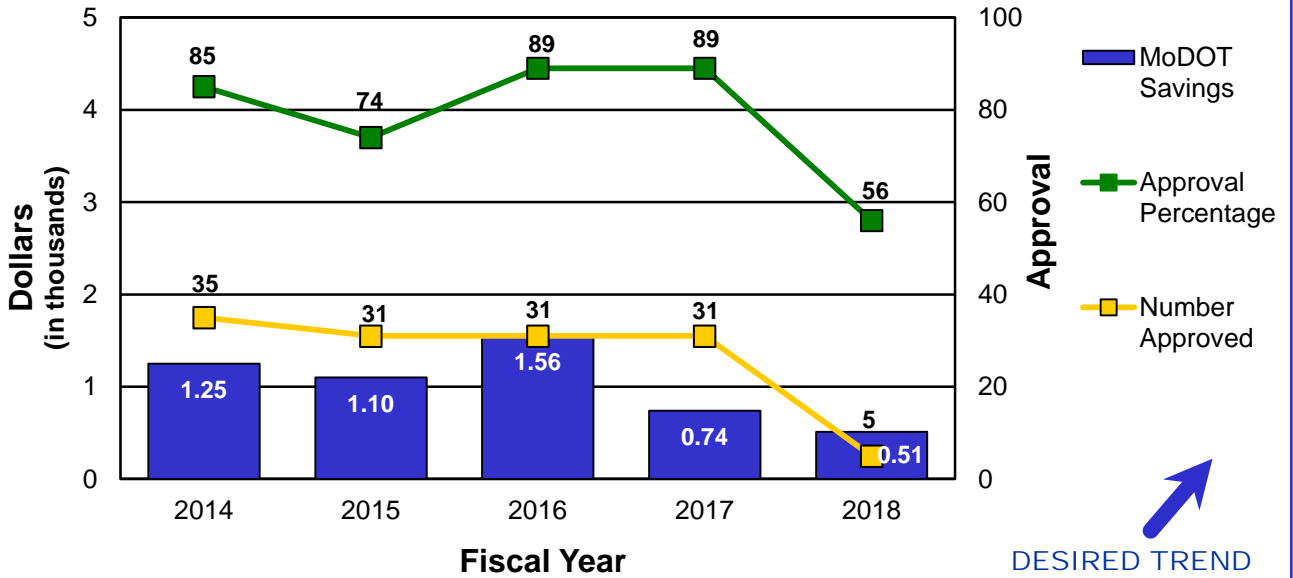
Nationally, VE studies save millions of dollars every year. In FY 2016, MoDOT saved over \$11.2 million and ranked 12<sup>th</sup> out of 52 state departments of transportations. The Texas and Florida DOTs ranked highest with \$263 million and \$175 million, respectively.

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## Percent of Awarded Projects with Value Analysis Design Phase



## Value Engineering Proposals by Dollar and Number Construction Phase



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State Design Engineer

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## *Percent of customers who believe completed projects are the right transportation solutions – 4f*

## MEASUREMENT

### DRIVER:

Missy Wilbers  
Design Liaison Engineer

## PURPOSE OF THE MEASURE:

This measure provides information regarding the public's perception of MoDOT's performance in providing the right transportation solutions.

One of the most prominent products MoDOT delivers to its customers is a highway construction project. While the department tries to involve local residents in planning and designing local projects, the real impact of the project isn't known until people actually use the results of the project.

In 2016, a pilot project was conducted to determine the value of implementing an alternative survey mechanism. Two projects – one large and one small – were surveyed online. These online surveys yielded similar results, but cost 75 percent less than previously used mailed surveys.

In 2017, nearly 4,900 surveys were submitted online showing Missourians are satisfied with the majority of local projects and believe MoDOT provides the right transportation solution. The respondents thought the projects made the roadway: safer (75 percent), more convenient (72 percent), less congested (66 percent), easier to travel (69 percent), better marked (77 percent) and considered the projects the right transportation solution (80 percent).

## MEASUREMENT AND DATA COLLECTION:

Data for this measure was previously collected through an annual survey mailed to users of projects completed and opened to traffic within the previous year. The districts identified 21 projects – three per district – in three categories: large, medium and small. Large projects were defined as those involving a major route or one that was funded through major project dollars. Medium projects were of district-wide importance. Small projects had only local significance. A sample of residents was drawn from zip code areas adjoining the recently completed project.

Survey responses resulted in the following percentages of customers who believe completed projects are the right transportation solutions in each district: Northwest (84), Northeast (94), Kansas City (71), Central (92), St. Louis (54), Southwest (87) and Southeast (78).

As part of the survey, each respondent has the opportunity to provide comments about why the project was – or was not – the right transportation solution. More than 2,350 comments were received for the 21 online surveys. These comments were shared with local staff for evaluation to guide future projects.

In 2017, MoDOT changed the methodology for collecting data for this measure. Data collection will utilize social media platforms to gain more immediate feedback from customers impacted by projects.

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## Percent of Customers Who Believe Completed Projects Are the Right Transportation Solutions

