



# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

*Eric Schroeter, State Design Engineer*



# Tracker

MEASURES OF DEPARTMENTAL PERFORMANCE





MoDOT customers expect transportation solutions delivered on time and within budget. We manage our projects to get them completed quickly and at the best possible value. We work with our transportation partners to leverage innovation in improving our products and how we work. We pledge to honor our commitments and deliver the best, most cost-effective solutions.

## 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 June 29, 2018, 381 road and bridge projects were completed in fiscal year 2018 at a cost of \$844 million. This represents a deviation of 6 percent (or \$53 million) less than the programmed cost of \$897 million. Of the 381 road and bridge projects completed, 62 percent were completed within or below budget. In comparison, 62 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 \$49.9 million. Miscellaneous savings (right-of-way purchases, utilities and other costs) were \$17.9 million. There may be projects that have adjustments pending, which could cause a slight change in the final values.

In addition, 101 multimodal projects were completed at a cost of \$45.3 million, 4.4 percent (or \$2.1 million) less than the programmed cost of \$47.4 million. A total of 145 local public agency projects were completed at a cost of \$142.5 million, 6.4 percent (or \$9.7 million) less than the programmed cost of \$152.2 million.

The target is zero percent difference, indicating MoDOT is making timely use of available funds. Road and bridge, multimodal and local public agency projects were within 5.9 percent of the target in FY 2018.

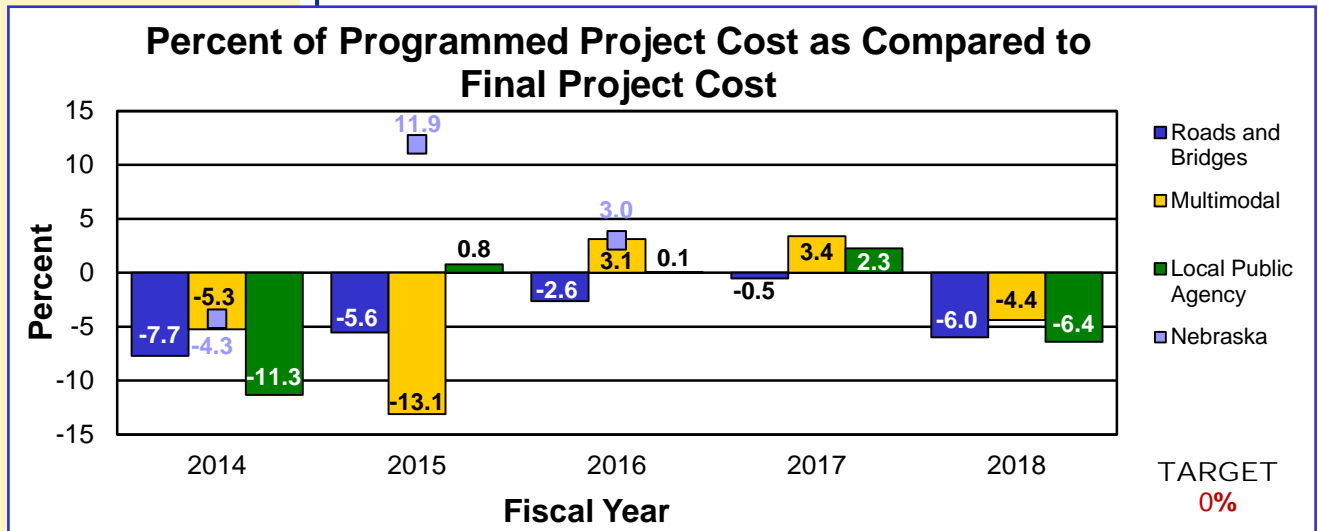
There was an adjustment to the final FY 2017 values, resulting in the multimodal percentage changing from 1.7 to 3.4 percent.

MoDOT uses this historical data as a guide for programming future projects. Projects awarded in FY 2017 and FY 2018 were about 9 percent lower than programmed values. If FY 2019 projects also reflect significant award savings, MoDOT plans to accelerate projects from FY 2020 to FY 2019.

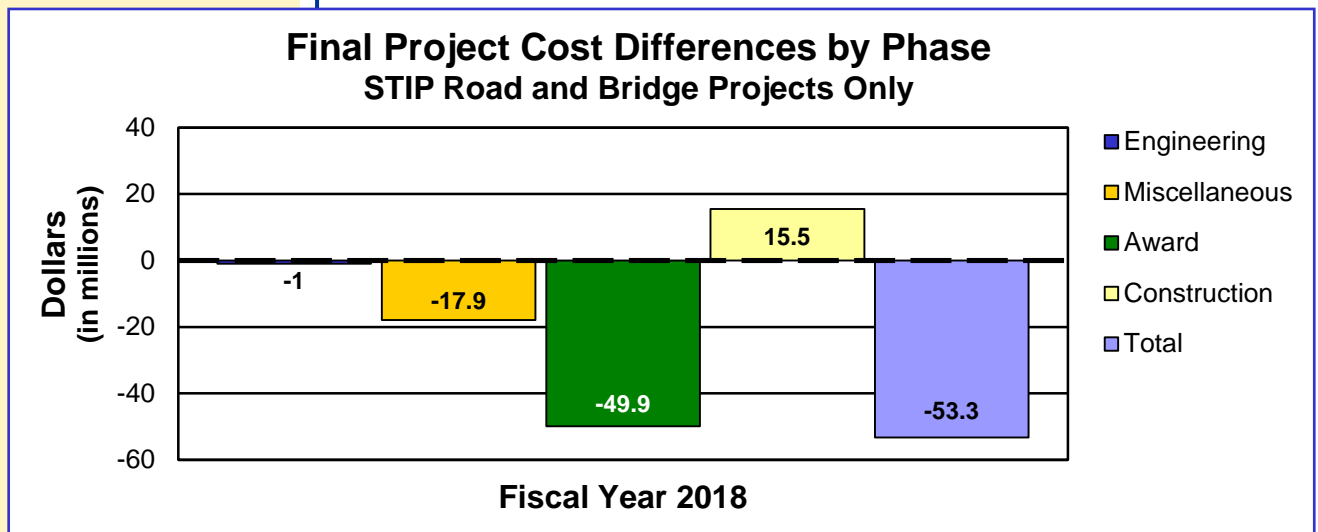




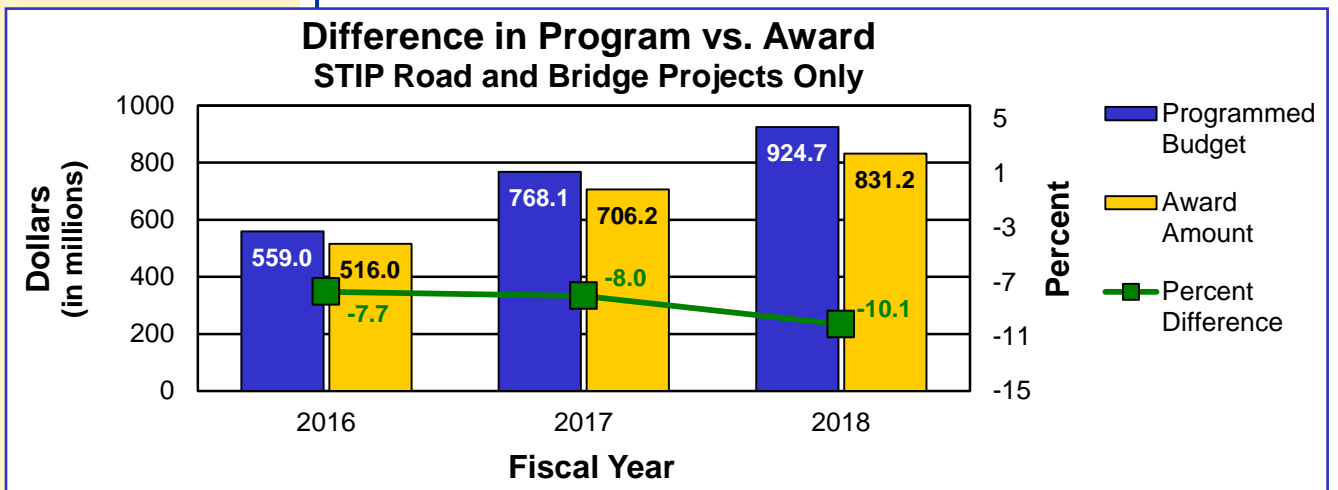
# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE



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



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



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.

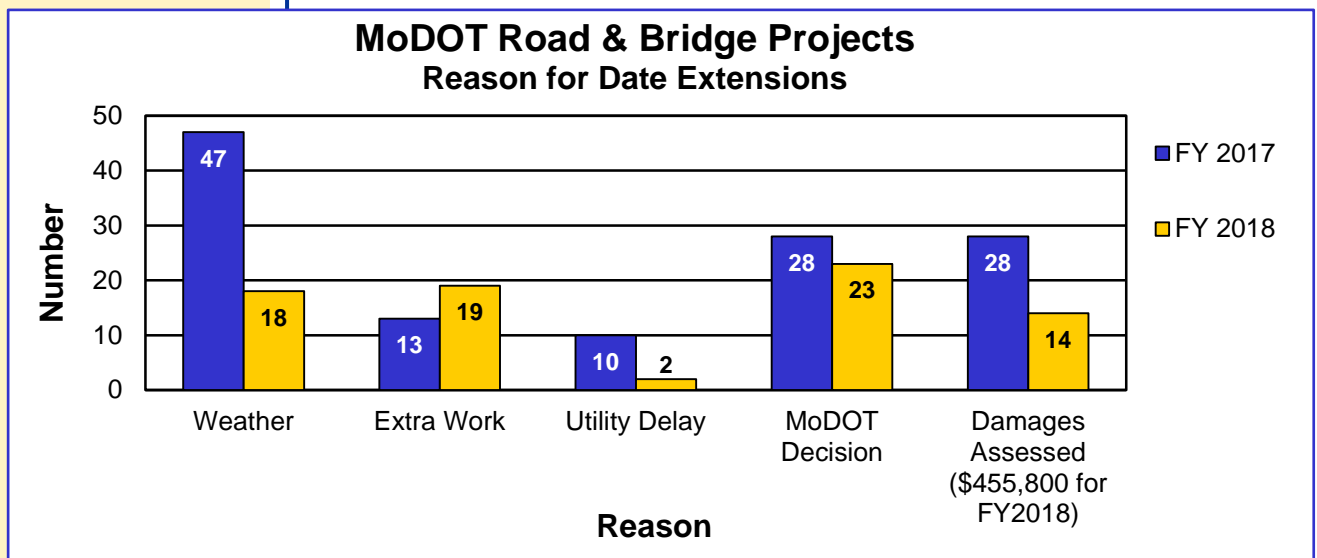
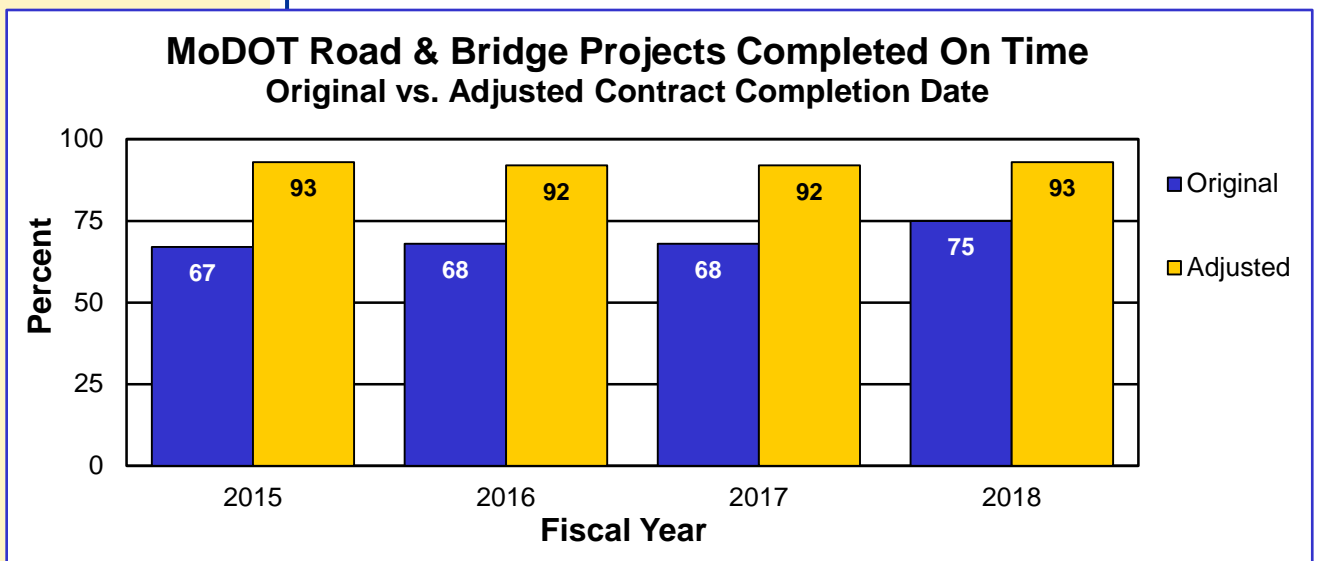
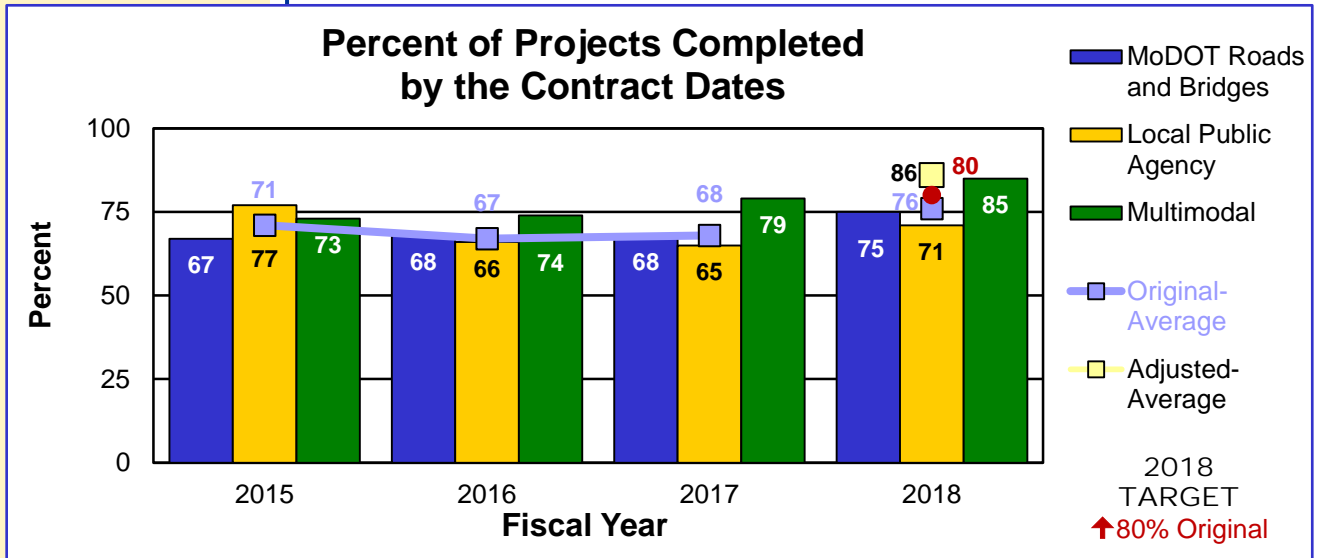
MoDOT works to meet the initial contract completion date by preparing accurate plans and quantities, setting aggressive but reasonable completion dates and setting liquidated damages to reinforce completion dates without undue bid risks. In fiscal year 2018, 76 percent of all closed-out projects were completed by their planned completion dates.

Weather, additional work or a MoDOT directive sometimes necessitates an authorized extension of the completion date without any financial assessment to the contractor. In FY 2018, 86 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 FY 2018 that did not meet the original contract date, 18 percent were extended due to weather delays, 19 percent were extended due to extra work, 2 percent experienced utility delays, 23 percent were extended by MoDOT and 14 percent missed the completion date with damages assessed totaling \$455,800.

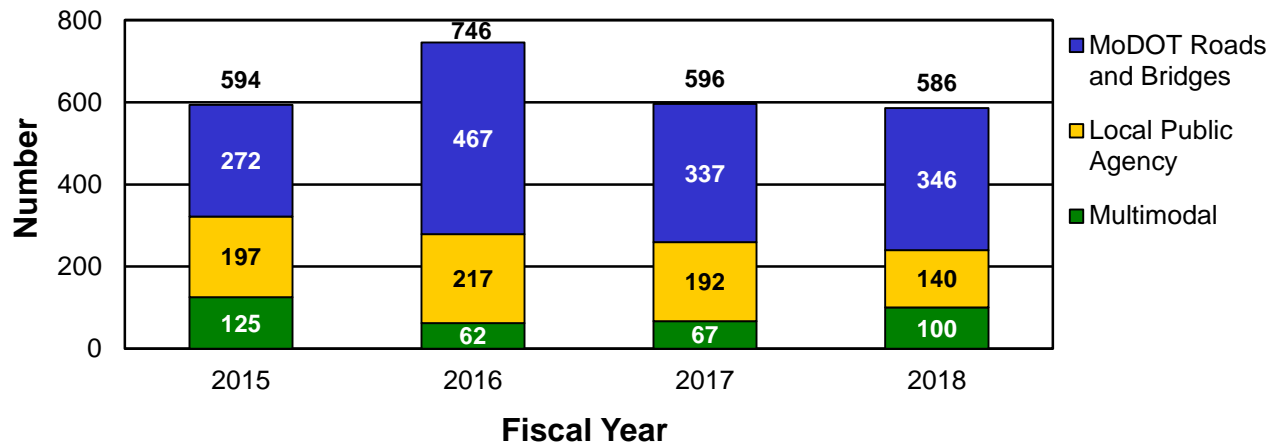
The target for this measure is to have at least 80 percent of projects completed by the original completion date. At the end of FY 2018, the average number of all contracts completed by the original completion date was 76 percent which is an 8 percent improvement from the previous year.

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

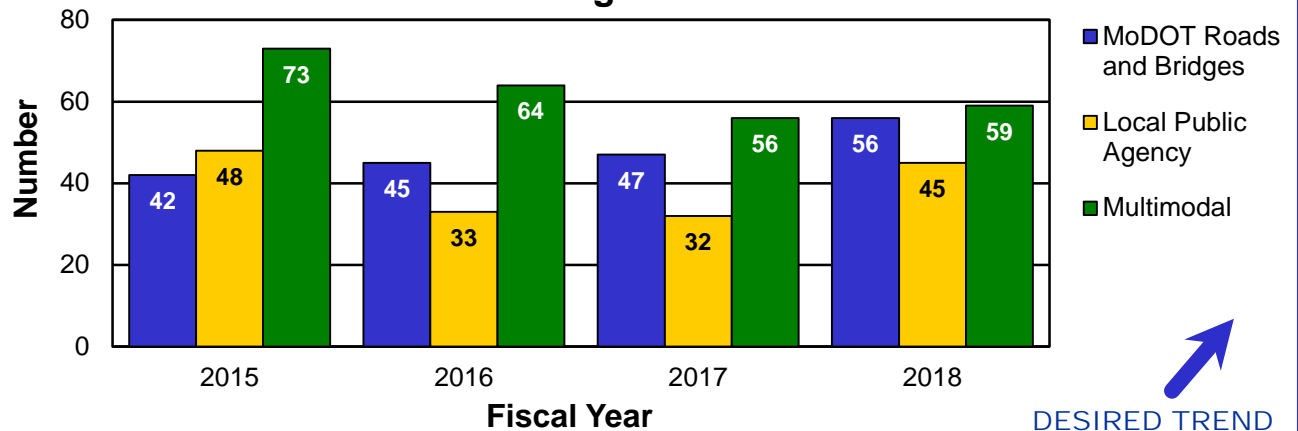


# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## Total Number of Projects Completed

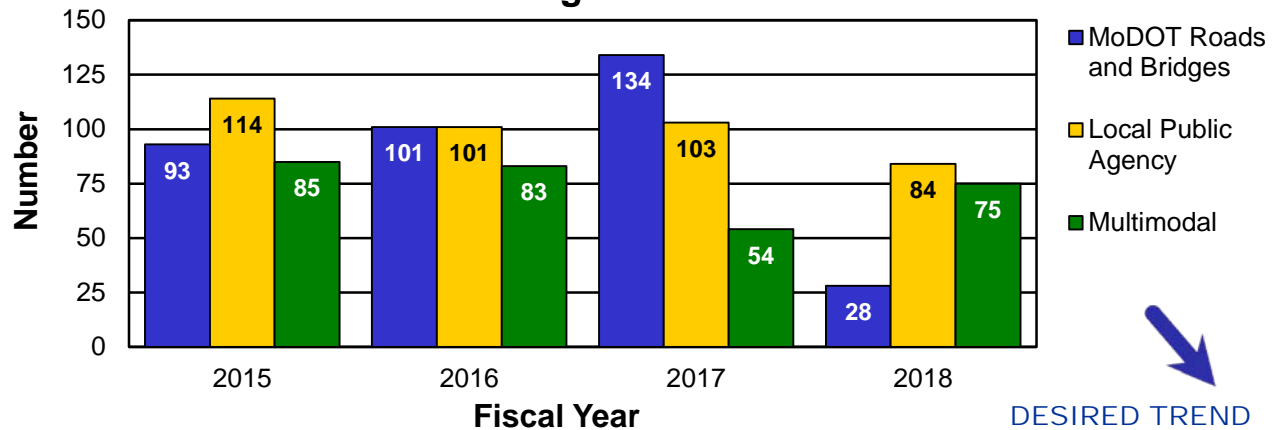


## Average Number of Days Completed Before Original Date



DESIRED TREND

## Average Number of Days Completed After Original Date



DESIRED TREND

RESULT DRIVER:  
Eric Schroeter  
State Design Engineer

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.

## DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

### *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 fiscal year 2018 is 1.5 percent over the award amount (\$12.5 million over the award amount of \$815 million worth of projects completed) with 52 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.

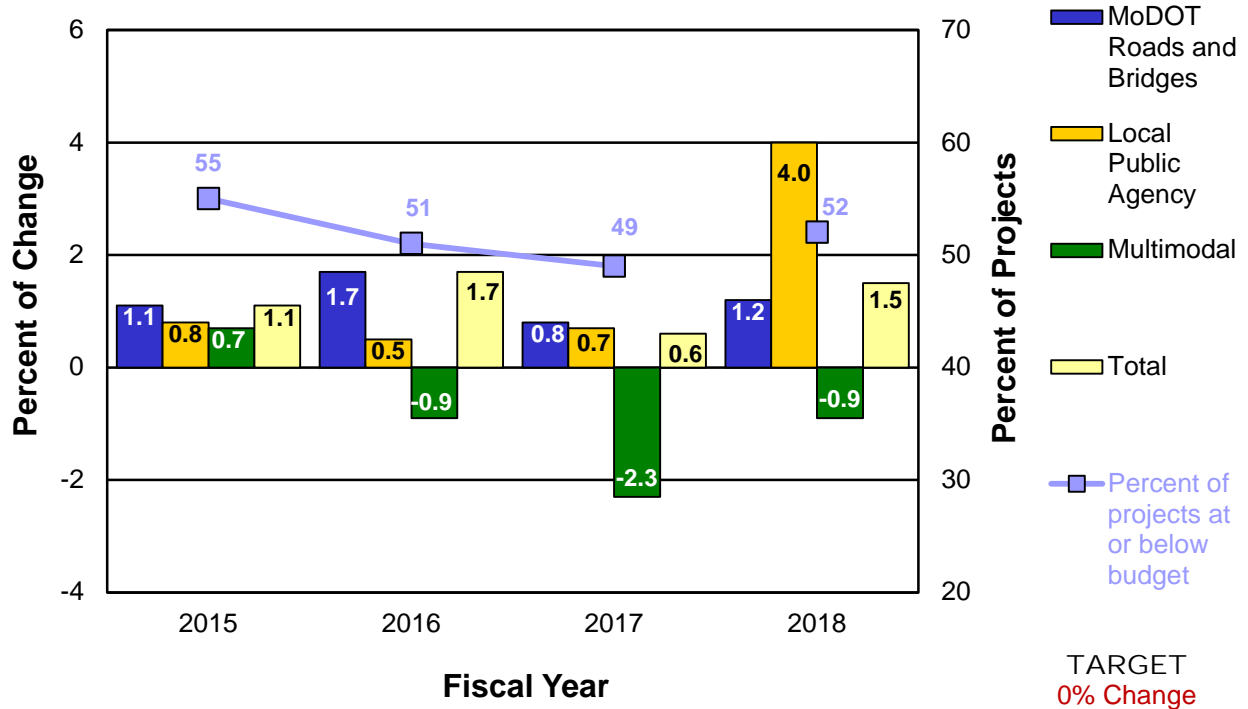
For FY 2018, MoDOT road and bridge projects were completed 1.2 percent over budget; local public agency projects were completed 4 percent over budget and multimodal projects were completed 0.9 percent under budget.



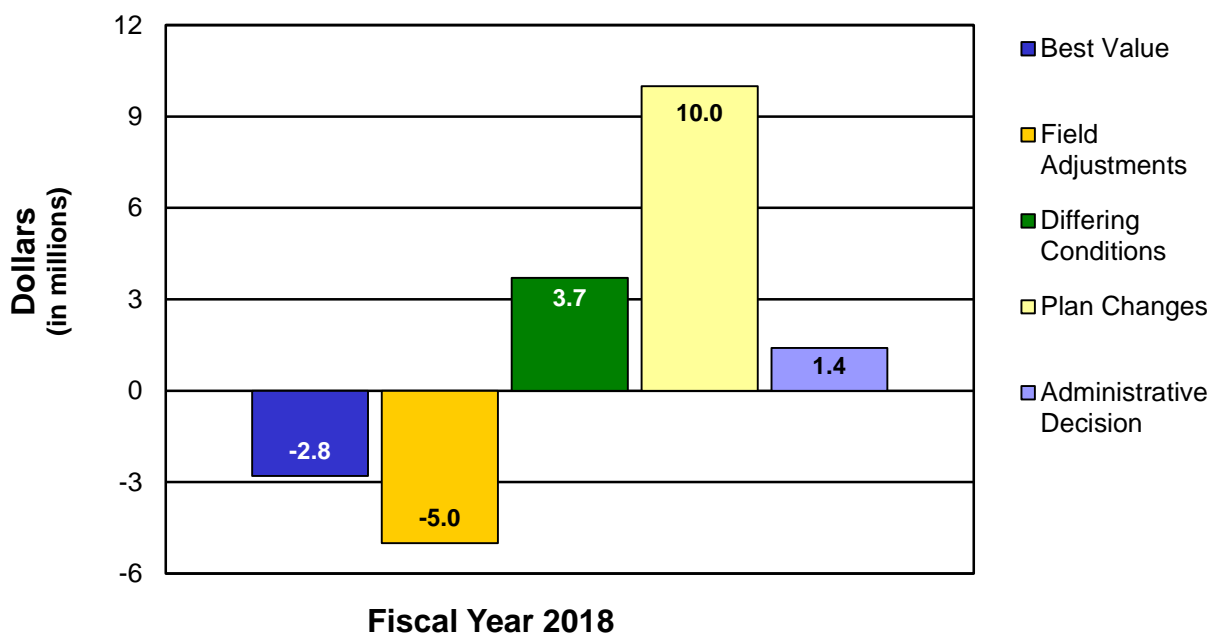


# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

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



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



## RESULT DRIVER:

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 more than \$1.6 billion in Design-Build projects that have saved taxpayers over \$277 million. When combined, these projects were completed more than 65 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.

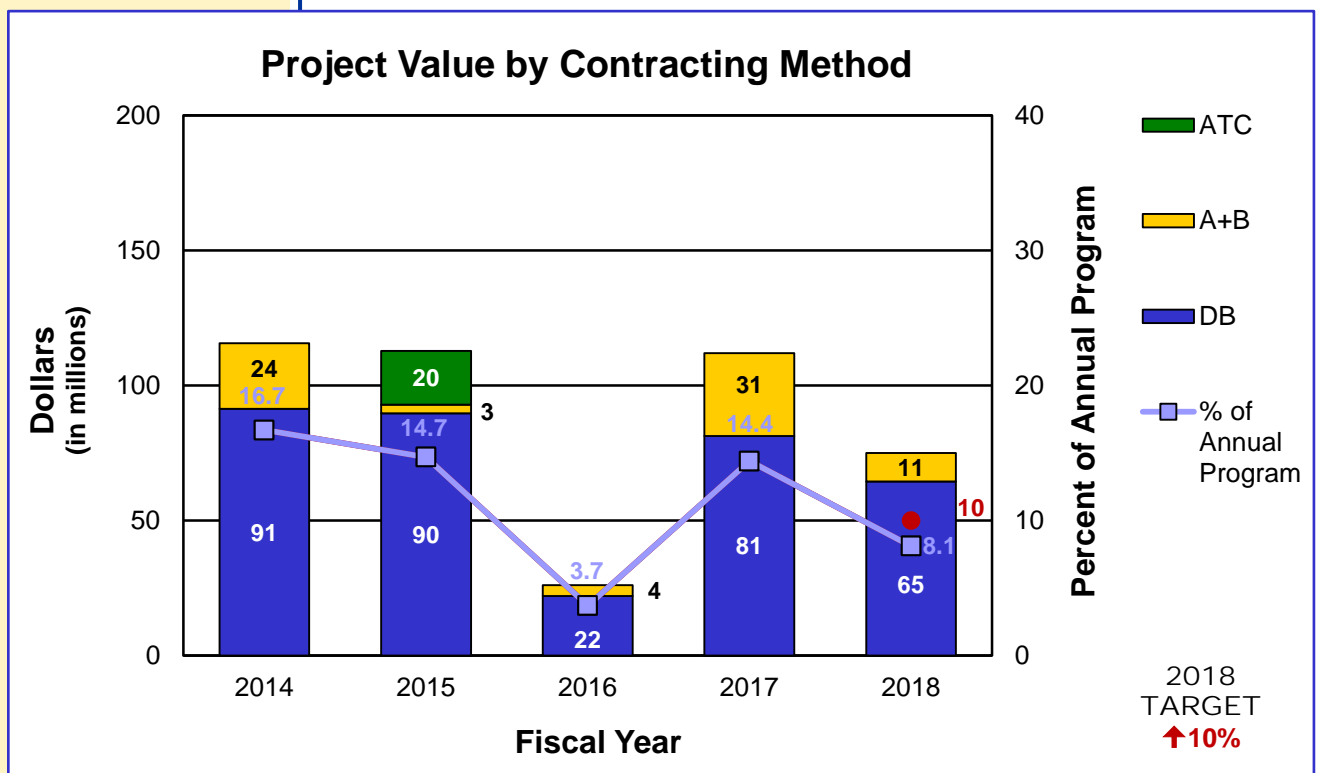
MoDOT evaluates project risks such as size (cost), type (preservation, rehabilitation or reconstruction) and complexity (opportunity for innovation and speed) when determining project delivery methods. The advantages of MoDOT's innovative contracting methods are as follows:

- 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 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, one Design-Build project was awarded in the Kansas City District. The I-435 South Loop Link project will renovate a critical link in the south side of the metropolitan area while improving mobility and safety on the corridor as well as maintaining traffic during construction.

Based on the 2018 STIP, MoDOT delivered three out of 461 projects statewide using innovative contracting methods. One was delivered using Design-Build and two were delivered using the A+B process. The DB project accounted for \$64.5 million and the two A+B projects accounted for \$10.5 million of the \$929.7 million programmed budget (8.1 percent). The target of two projects per year was met, but the percentage of programmed STIP dollars awarded was below the 10 percent target. MoDOT will continue to look for opportunities to further develop the innovative project delivery program as part of the Sharpening Our Strategic Vision initiative.

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE





## RESULT DRIVER:

Eric Schroeter  
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.

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 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.

The goal of value engineering 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 fiscal year 2018, 18 percent of applicable projects underwent some form of value analysis during design, which is below target for design-phase value analyses. The percentage of projects with value analysis will improve with increased engagement with district design personnel. Value engineering is an important initiative in Sharpening Our Strategic Vision, and MoDOT is committed to adding value and identifying savings in every project possible.

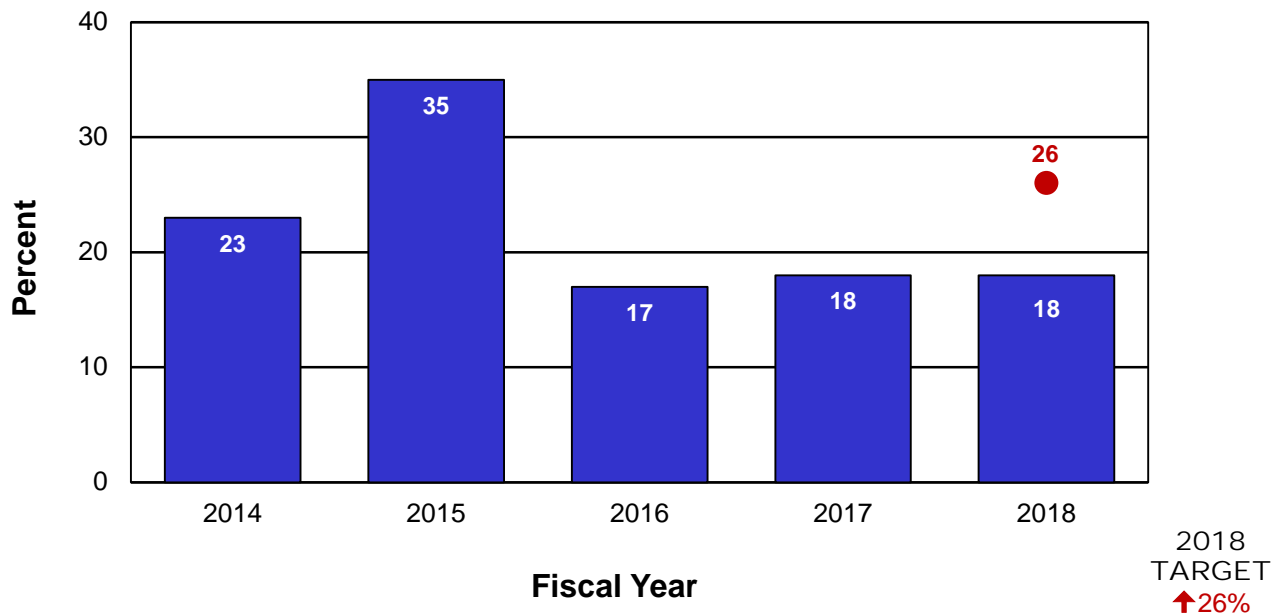
Programmatic value analysis studies associated with the level-course and seal coat programs continue to account for a large portion of this percentage. Three traditional value engineering studies were completed in two districts this fiscal year. Two of those three will potentially save \$3.1 million. The third study has not been finalized as of this printing. 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 engage contractor ideas to deliver improved projects. For FY 2018, 27 VECs were approved resulting in a MoDOT savings of \$2.98 million. This represents a 75 percent approval rate. One Post-Award Value Engineering change proposal has resulted in a MoDOT cost savings of \$20,220.

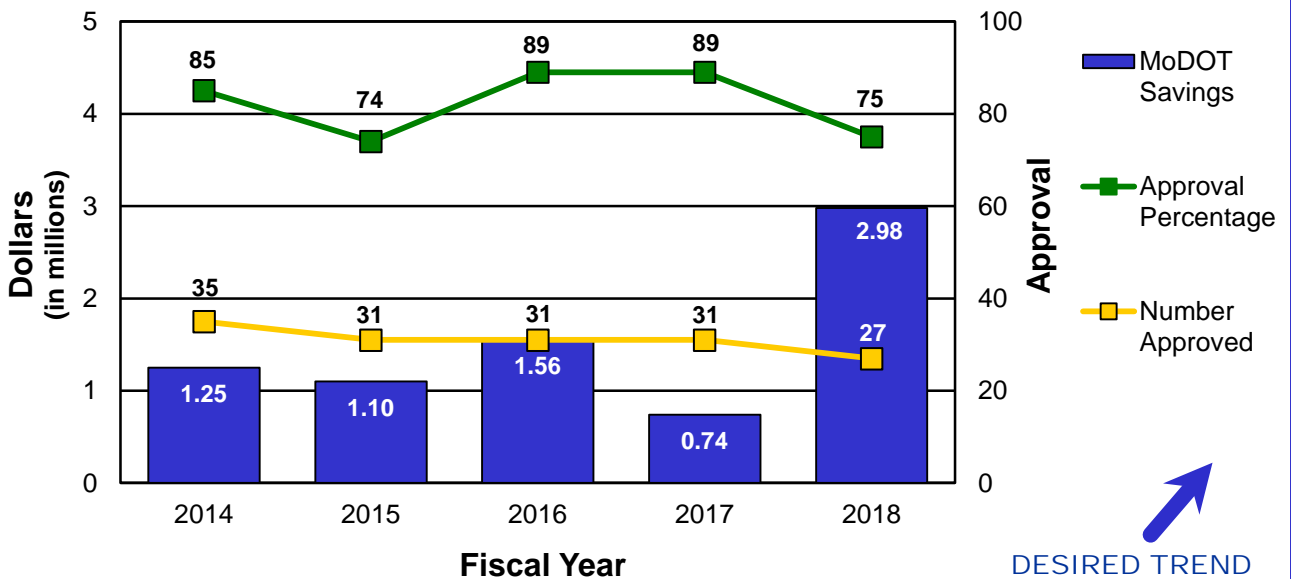
Nationally, VE studies save millions of dollars every year. In FY 2016, MoDOT saved more than \$11.2 million and ranked 12<sup>th</sup> out of 52 state departments of transportation. The Texas and Florida DOTs ranked highest with \$263 million and \$175 million, respectively.

# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

## Percent of Awarded Projects with Value Analysis Design Phase



## Value Engineering Proposals by Dollar and Number Construction Phase



## RESULT DRIVER:

Eric Schroeter  
State Design Engineer

## 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.

## 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.

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 – 4f*

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).

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.



# DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

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

