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.

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

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

RESULT DRIVER:
Eric Schroeter
State Design Engineer

MEASUREMENT DRIVER:
Renate Wilkinson
Planning and Programming Engineer

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.

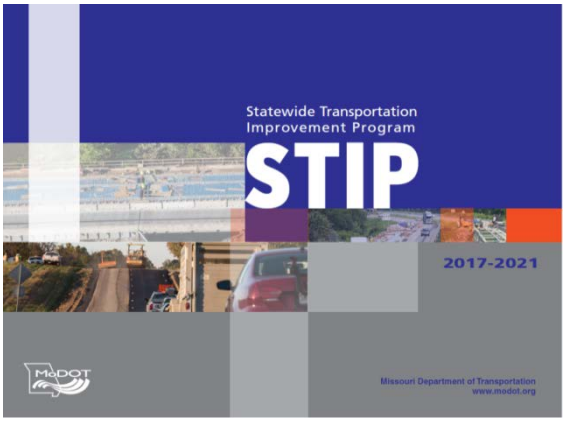
MEASUREMENT AND DATA COLLECTION:
Completed project costs are reported during the fiscal year in which a project is completed. Road and bridge project costs include design, right-of-way purchases, utilities, construction, inspection and other miscellaneous costs. The programmed cost is based on the amount 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.

Accurate program cost estimates help MoDOT deliver more timely improvements for taxpayers. As of September 30, 2016, 142 road and bridge projects were completed in fiscal year 2017 at a cost of $326.9 million. This represents a deviation of 3.8 percent (or $13 million) less than the programmed cost of $339.8 million. Of the 142 road and bridge projects completed, 46 percent were completed within or below budget. In comparison, 51 percent of projects were completed within or below budget as of the same date a year ago. The largest component of project savings comes from engineering at $5 million. Award savings were $4 million. Miscellaneous savings (right-of-way purchases, utilities and other costs) were $3 million. Construction-phase savings were $1 million.

In addition, 15 multimodal projects were completed at a cost of $3.4 million, 5.31 percent or $172,000 more than the programmed cost of $3.2 million. A total of 42 local public agency projects were completed at a cost of $26.4 million, 3.46 percent or $900,000 less than the programmed cost of $27.3 million.

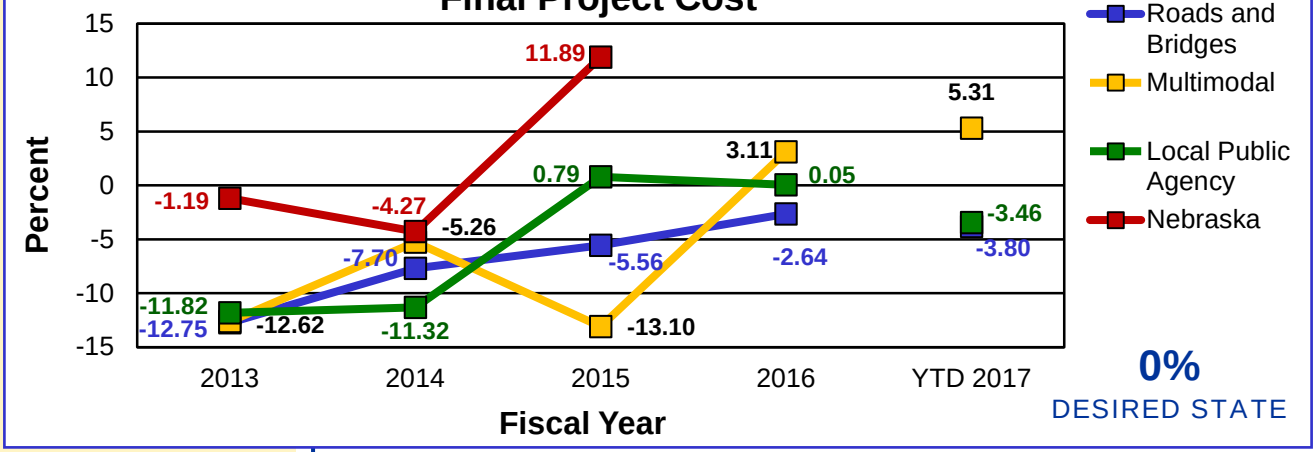
There was a small adjustment to the final 2016 values, resulting in the road and bridge percentage changing from 2.65 to 2.64 percent.

MoDOT uses this historical data as a guide for programming future projects. Projects awarded in FY 2014 and 2015 were 1 percent higher and 2 percent lower, respectively, than programmed values. Consequently, the 2015-2019, 2016-2020 and 2017-2021 STIPs were developed assuming no significant award savings. Projects awarded in FY 2017 through September were 6.5 percent more than programmed values.



DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

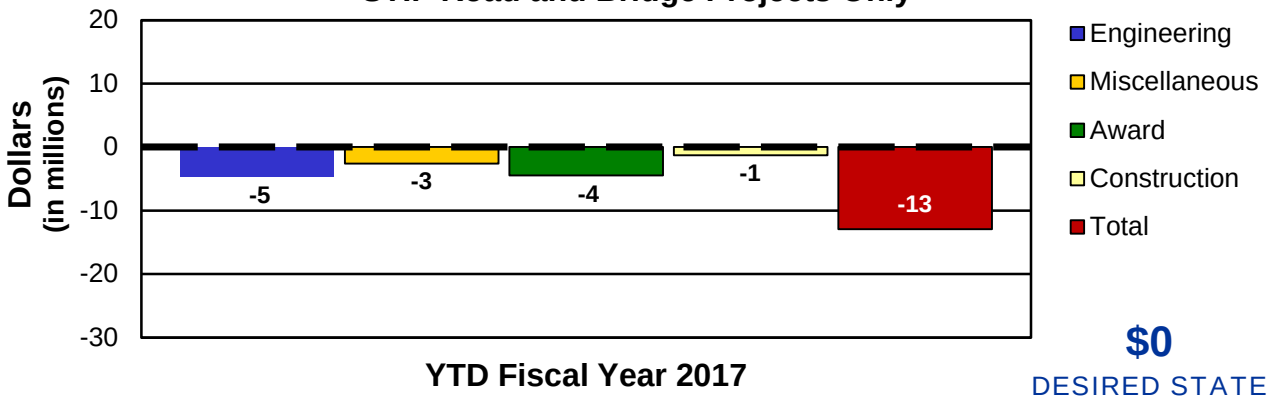
Percent of Programmed Project Cost as Compared to Final Project Cost



0%
DESIRED STATE

Positive numbers indicate the final (completed) cost was higher than the programmed cost. Comparative data is from Nebraska Department of Roads, one-year schedule of highway improvement projects. 2016 data is not yet available.

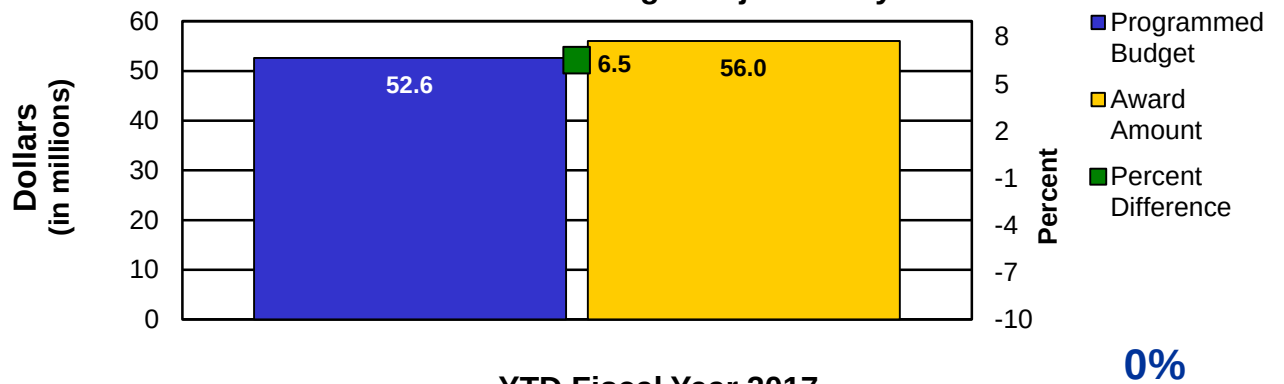
Final Project Cost Differences by Phase
STIP Road and Bridge Projects Only



$0
DESIRED STATE

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



0%
DESIRED STATE

Amounts include STIP road and bridge projects with 2 percent construction contingency applied.

RESULT DRIVER:
Eric Schroeter
State Design Engineer

MEASUREMENT DRIVER:
Jay Bestgen
Assistant Construction and Materials Engineer

PURPOSE OF THE MEASURE:
This measure tracks the percentage of projects completed by the commitment date established in the contract. This includes road, bridge, local public agency 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.

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

Percent of projects completed on time – 4b

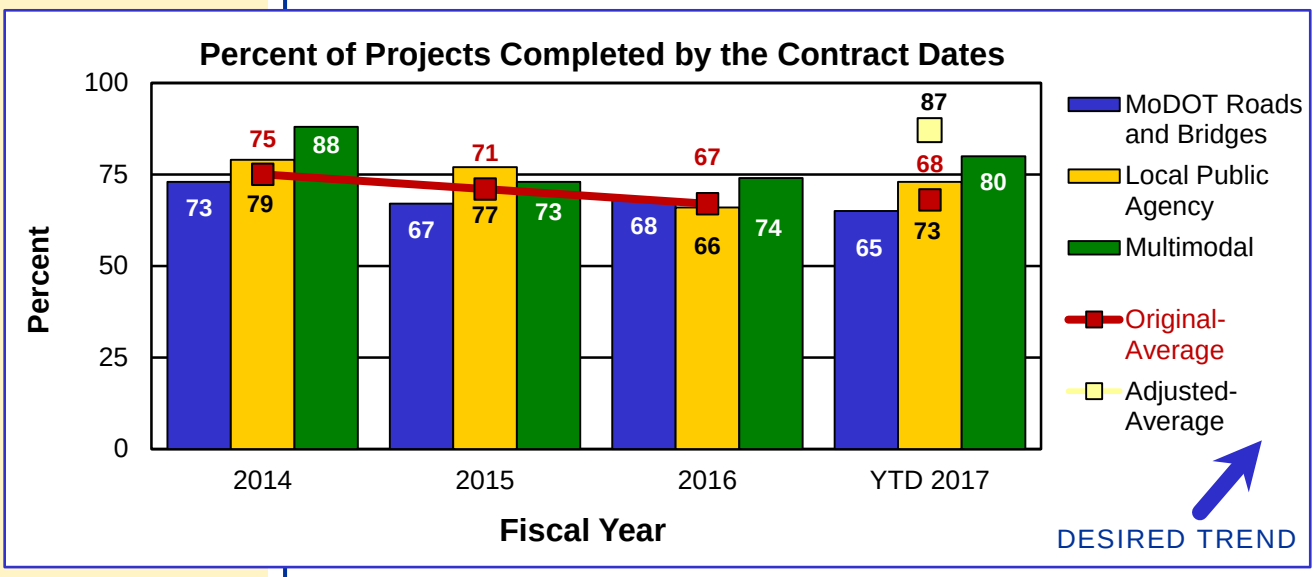
MoDOT's customers expect transportation improvements to be completed quickly with minimal impact to their lives. Delivering projects by the contract completion date is the target for all projects and is considered a commitment to Missourians and drivers. Completing projects on time helps maintain credibility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

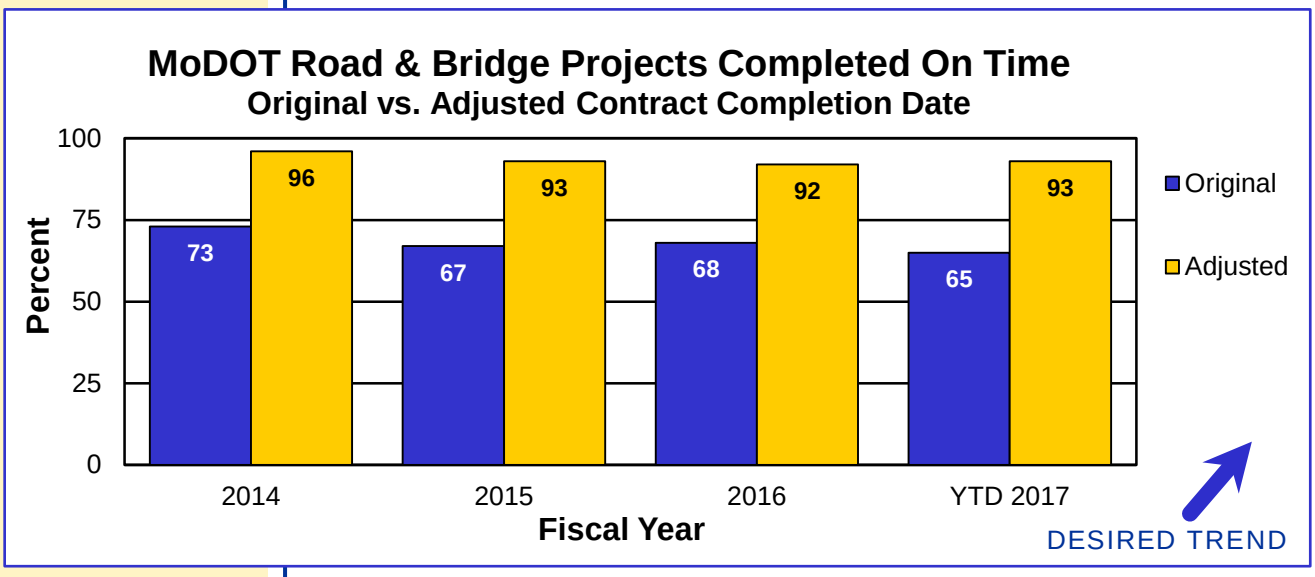
MoDOT works to meet the initial contract completion date by preparing accurate plans and quantities, setting aggressive but reasonable completion dates and setting liquidated damages to reinforce completion dates without undue bid risks. In the first quarter of fiscal year 2017, 68 percent of the closed-out projects were completed by their planned completion date.

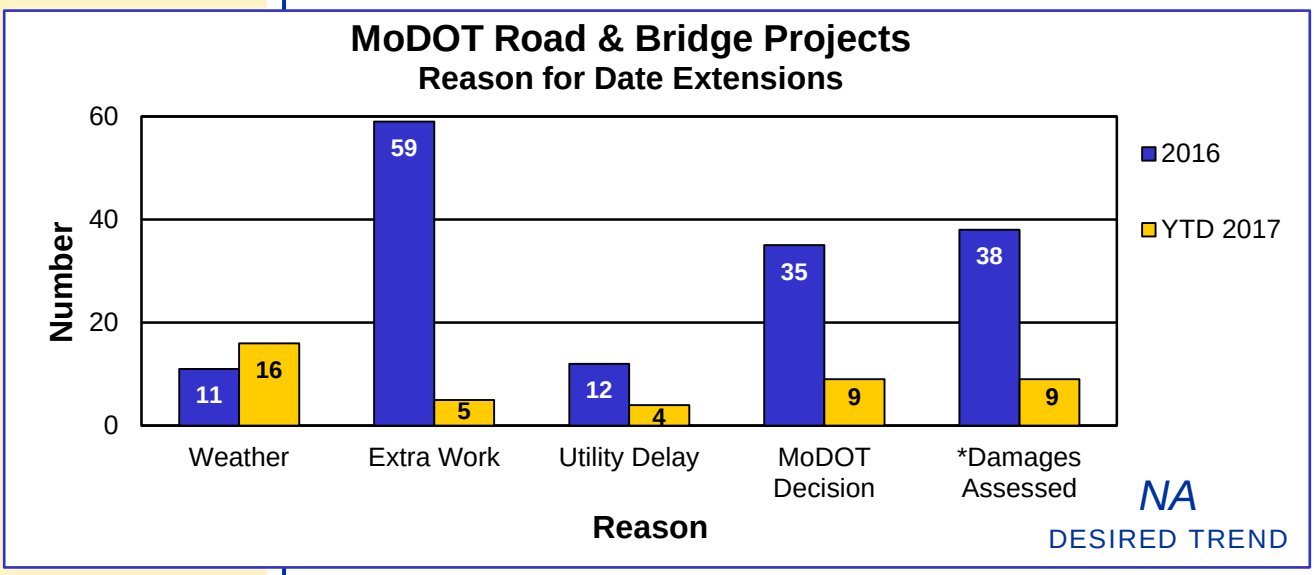
Sometimes, unusual weather, additional work or a MoDOT directive necessitates an authorized extension of the completion date, without any financial assessment to the contractor. In the first quarter of fiscal year 2017, 87 percent of the closed-out projects were completed by the adjusted dates.

There also are times when a contractor misses the contract completion date and the contractor may be assessed damages. Of the road and bridge projects completed in first quarter of fiscal year 2017 that did not meet the original contract date, 37 percent were extended due to weather delays, 12 percent were extended due to extra work, 9 percent experienced utility delays, 21 percent were extended by MoDOT and 21 percent missed the completion date with damages assessed totaling $300,100.

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE



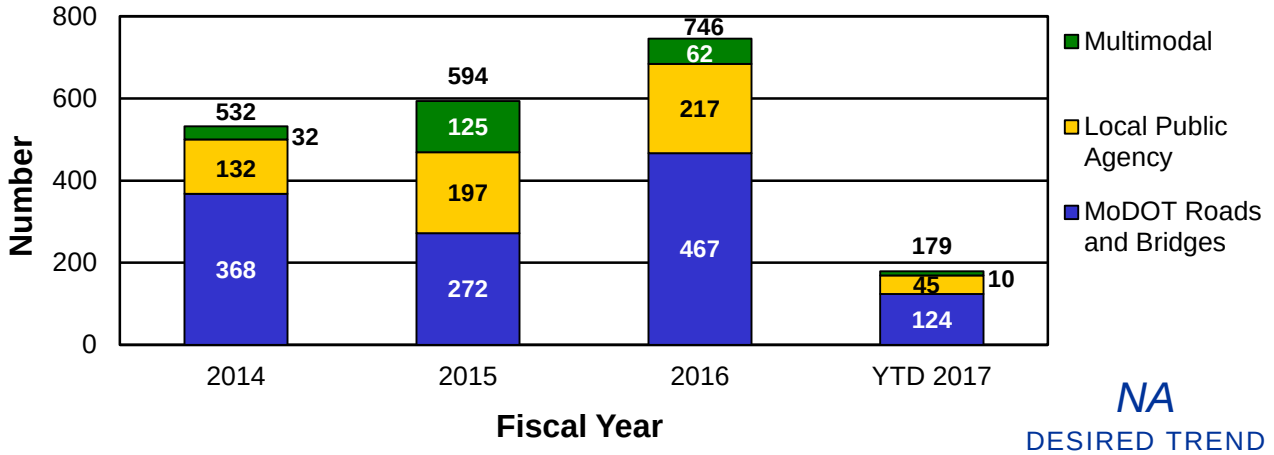




*** Damages assessed totaled $300,100 for YTD 2017.**

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

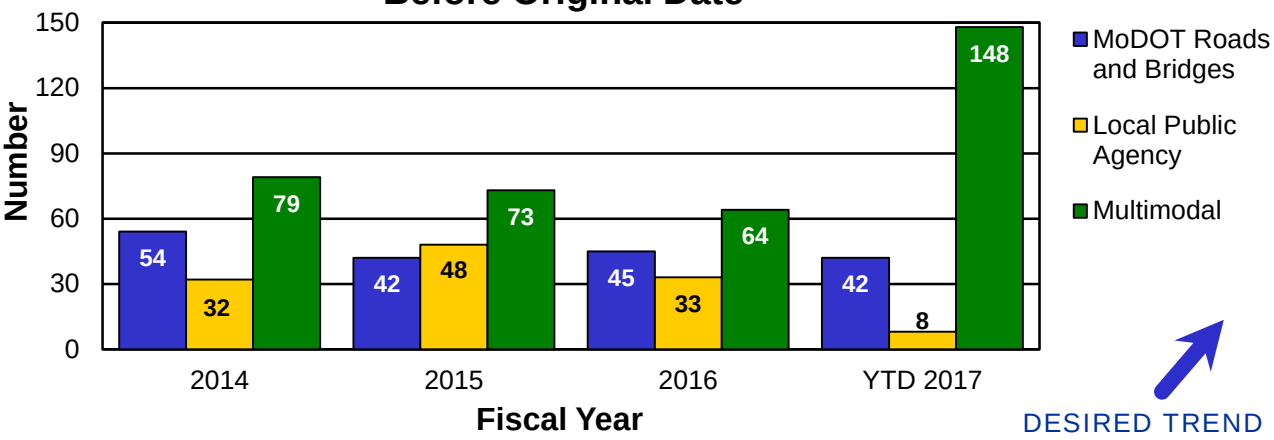
Total Number of Projects Completed



NA

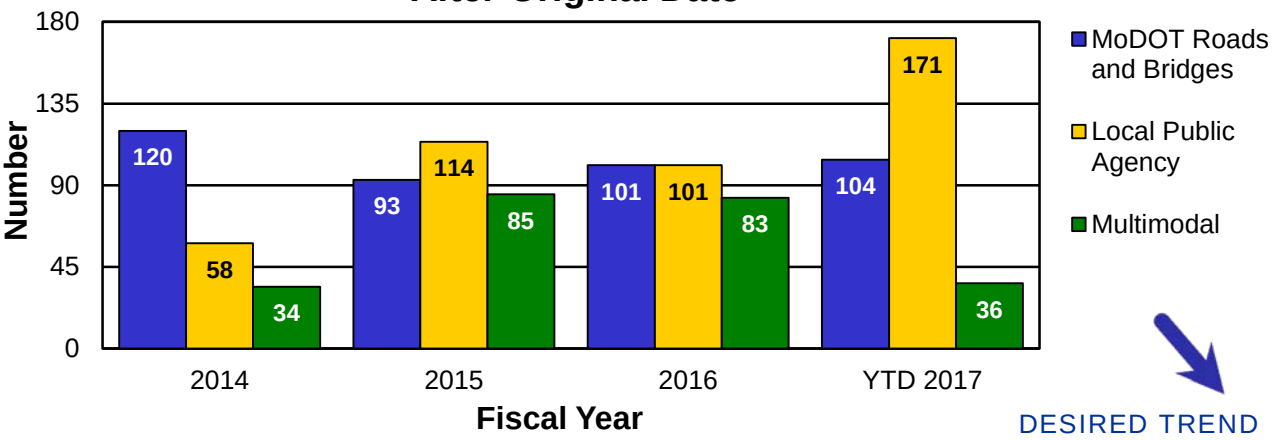
DESIRED TREND

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:
Jeremy Kampeter
Construction Management System Administrator

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 underrun/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.

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

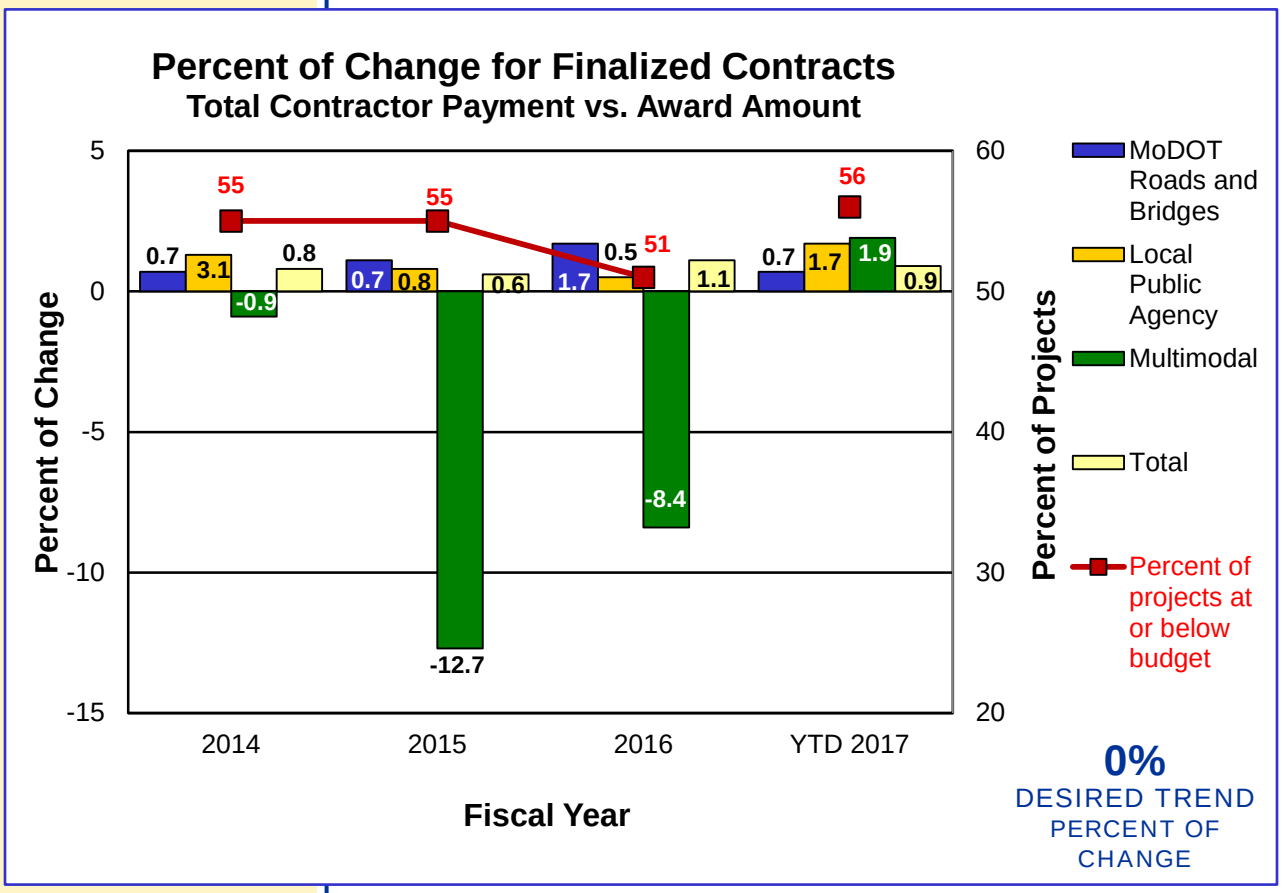
Percent of change for finalized contracts – 4c

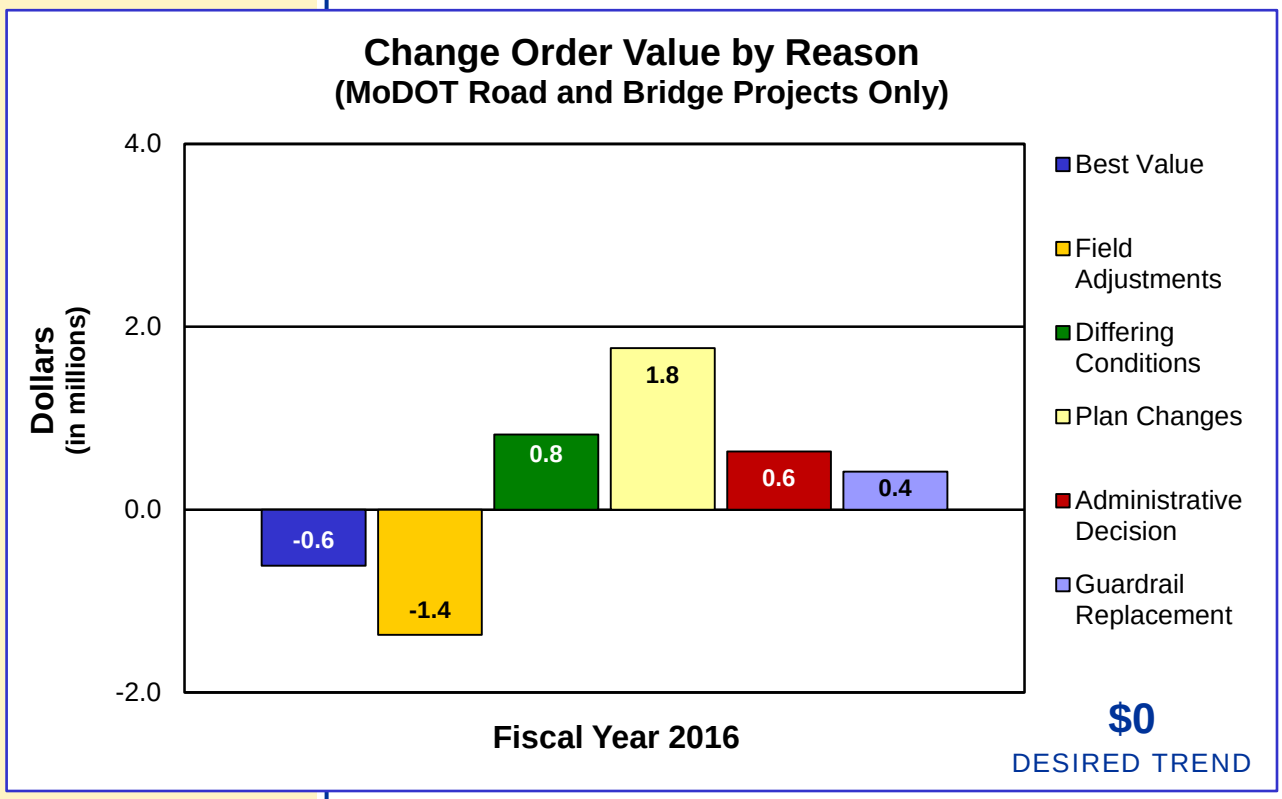
By limiting overruns on contracts, MoDOT can continue to keep its maintenance and construction commitments. This emphasis combined with the use of practical design and value engineering has contributed to limiting overruns on contracts. MoDOT's performance in the first quarter of fiscal year 2017 is 0.9 percent over ($2.3 million over the award amount of $264 million worth of projects completed) with 56 percent of the projects being completed below the original 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 quarter of fiscal year 2017, MoDOT road and bridge projects were completed 0.7 percent over budget, the local public agency projects were completed 1.7 percent over budget and multimodal projects were completed 1.9 percent over budget.

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE





RESULT DRIVER:
Eric Schroeter
State Design Engineer

MEASUREMENT DRIVER:
David Simmons
Transportation Project Manager

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.

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

Innovative contracting methods – 4d

MoDOT continues to partner with the public and private sectors to deliver projects that maximize available resources into collaborative solutions that achieve goals. This collaborative effort challenges the way projects are delivered with innovation, speed and efficiency as the driving force. MoDOT pushes the boundaries to execute projects of different size and complexity using these methods.

MoDOT evaluates project characteristics (risks) such as project 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:

- Design-Build (DB) contracts include design and construction under one contract, which is procured using a two-phased, contractor-selection process. MoDOT scores proposals using a best-value or "build-to-budget" selection. Nationally, DB projects are completed 33 percent faster and six percent cheaper than conventional Design-Bid-Build projects.
- 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.

Utilization of innovative contracting techniques to increase project value is increasing nationwide wide. Since 2002, design-build usage alone has grown 600 percent among state DOT's. The 2017-2021 STIP provides new opportunities to grow this method of project delivery on the right projects.

Based on the STIP in fiscal year 2016, MoDOT delivered only two out of 288 projects statewide using innovative contracting methods. One of them was delivered as design-build and the other delivered using the A+B process. These two projects accounted for $25.8 million of the $698.6 million programed budget.

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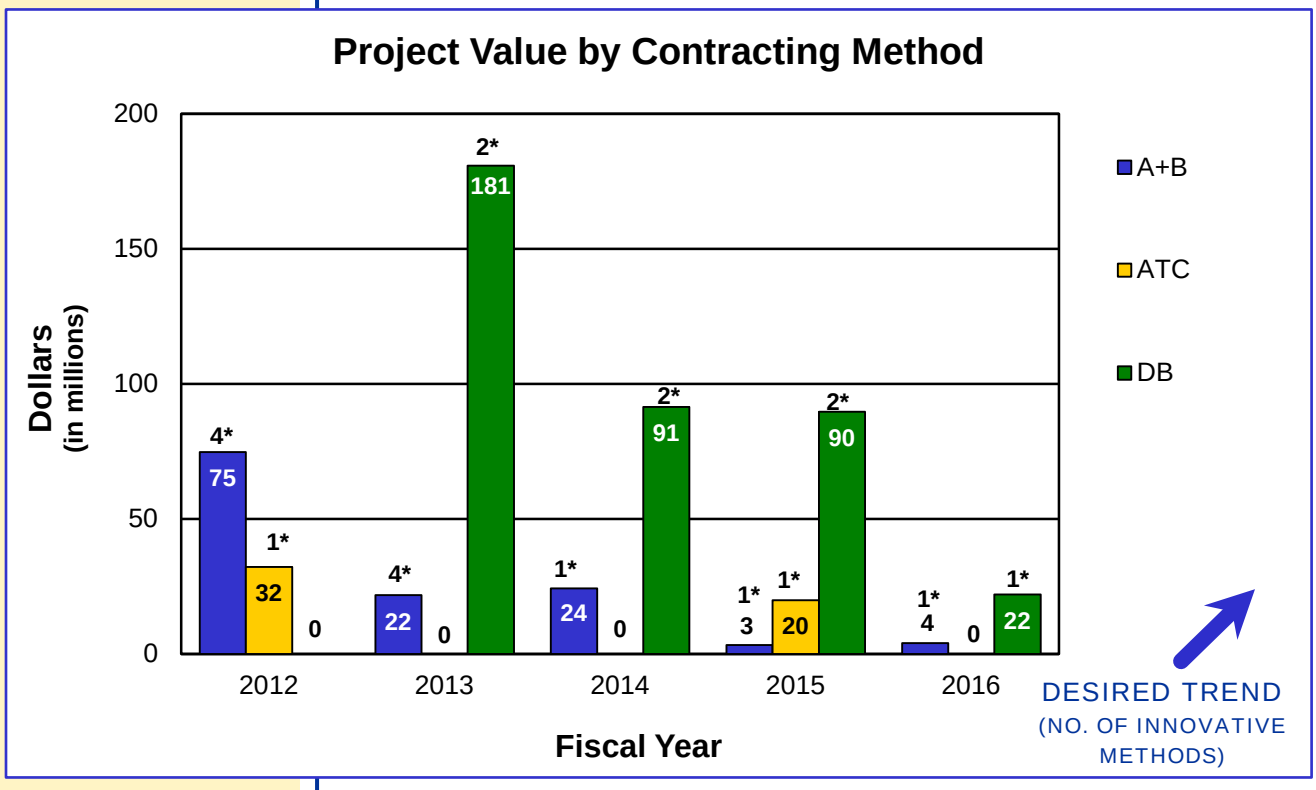

***Reflects total number of projects for each innovative contract method.**

RESULT DRIVER:
Eric Schroeter
State Design Engineer

MEASUREMENT DRIVER:
Llans Taylor
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.

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

Value engineering – 4e

The goal of value engineering is to build the right project at the right time, meeting the project need with 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 utilizing 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 2016, 17 percent of projects underwent some form of value analysis during design. Programmatic value analysis studies associated with the level-course and chip-seal programs accounted for the largest portion of this percentage. Outreach continues in an effort to improve in this area and to find innovative approaches to grow this program.

MoDOT partners with industry to find more cost-effective solutions during the construction phase. Value Engineering Proposals engage contractor ideas to deliver improved projects. In fiscal year 2016, 31 VEPs were approved resulting in a MoDOT savings of $1,558,397. This represents an 89 percent approval rate. The new Post Award Value Engineering workshop concept is currently being piloted. Outreach continues in an effort to improve in this area and to find innovative approaches to grow the VEP program.

A successful VEP program incorporates approved VEPs into future projects, in order for MoDOT to realize all of the affiliated savings. To date, 243 approved VEPs have been reviewed resulting in five revisions to policy and 19 potential items still being investigated. Each approved VEP is reviewed for potential implementation and, if necessary, to determine the appropriate champion to oversee the resulting policy or standards development.

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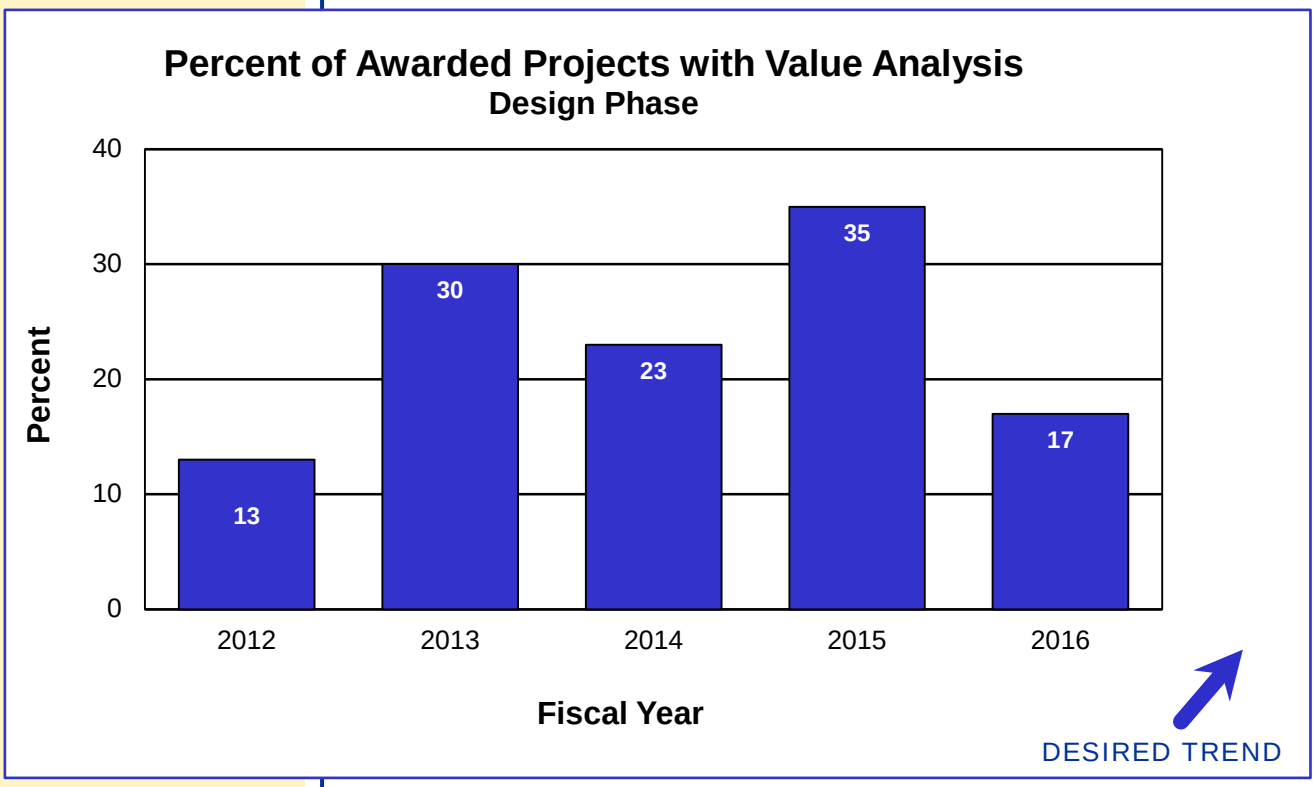

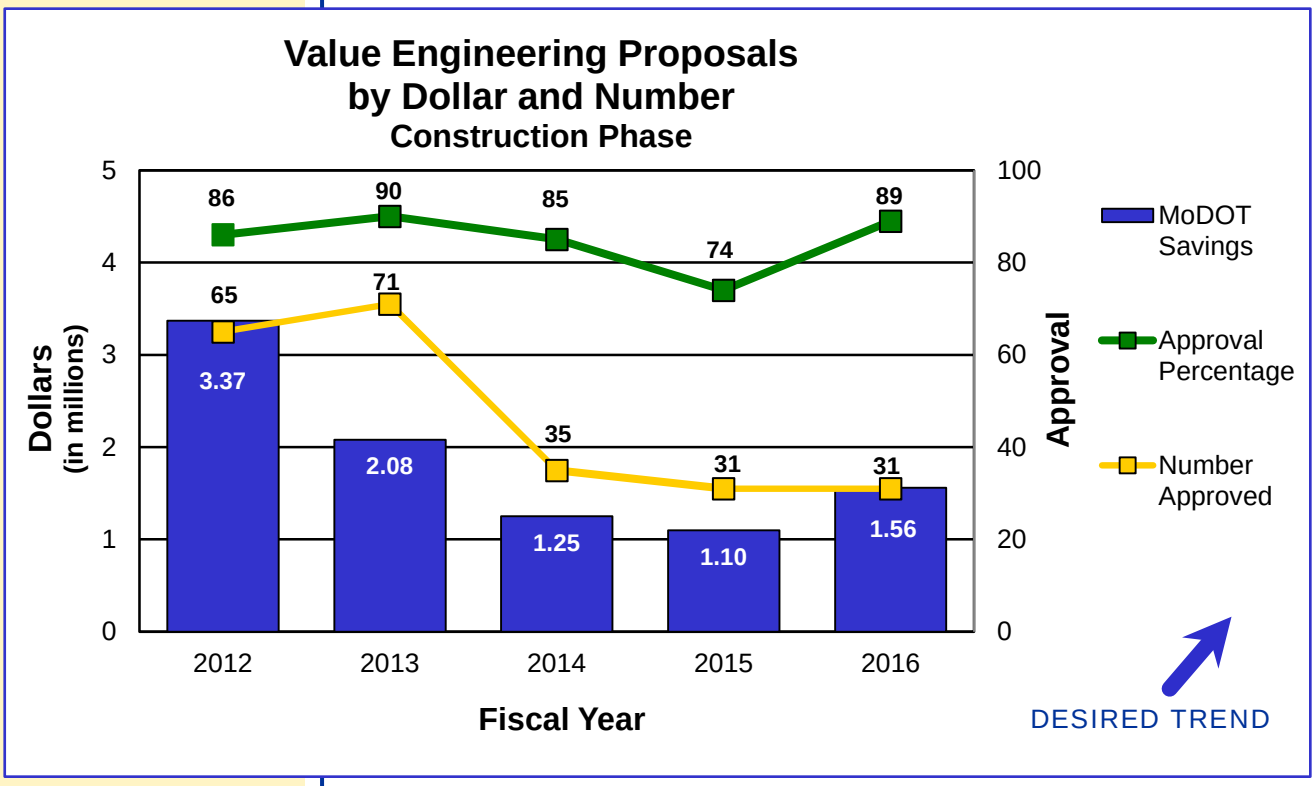

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

Average highway lane-mile and bridge construction costs – 4f

RESULT DRIVER:
Eric Schroeter
State Design Engineer

MEASUREMENT DRIVER:
Jason Vanderfeltz
Bidding and Contract Services Engineer

PURPOSE OF THE MEASURE:
This measure tracks the costs to construct a variety of common highway and bridge construction projects including the costs for equipment, labor and fringe benefits and materials to construct a project.

MEASUREMENT AND DATA COLLECTION:
Data is collected from MoDOT bid opening prices. Costs for chip seal and minor road one-inch asphalt resurfacing include the pavement, traffic control and temporary pavement marking. Costs for major highway and interstate asphalt resurfacing include the pavement, traffic control, permanent pavement marking, rumble strips, pavement repair, guardrail and signing. New two- and four-lane construction costs include grading, drainage, pavement, bridge and all incidental costs. The average cost per square-foot of bridge is tabulated and applied to the area of the average bridge on the state system to simplify comparison.

A great many factors affect the cost of road and bridge projects, some can be managed by MoDOT, and others are affected by the economy. For example, Missouri's highway system has long depended on fuel taxes, but consumers are turning to smaller, more fuel-efficient vehicles, and when fuel prices are high, they look for ways to decrease their personal transportation costs by driving less. Many of these smaller vehicles cost less, meaning that sales taxes are lower and consequently so are transportation revenues. Meanwhile, inflation has increased the cost of projects, resulting in reduced purchasing power for MoDOT. Minor road asphalt resurfacing costs have increased in recent years due to a combination of fluctuating fuel and oil prices and increased material costs. Overall, the prices of asphalt, concrete and steel are double or triple what they were 20 years ago.

With MoDOT's construction program having dropped from $1.3 billion in 2009 to $596 million in fiscal year 2016, few complex two- and four-lane projects have been available for contractors to bid. For the larger, more robust projects, MoDOT continues to partner with industry to allow flexibility and encourage innovation while strategically scheduling bid openings to spread out the amount of work and financial obligation for the bidders.

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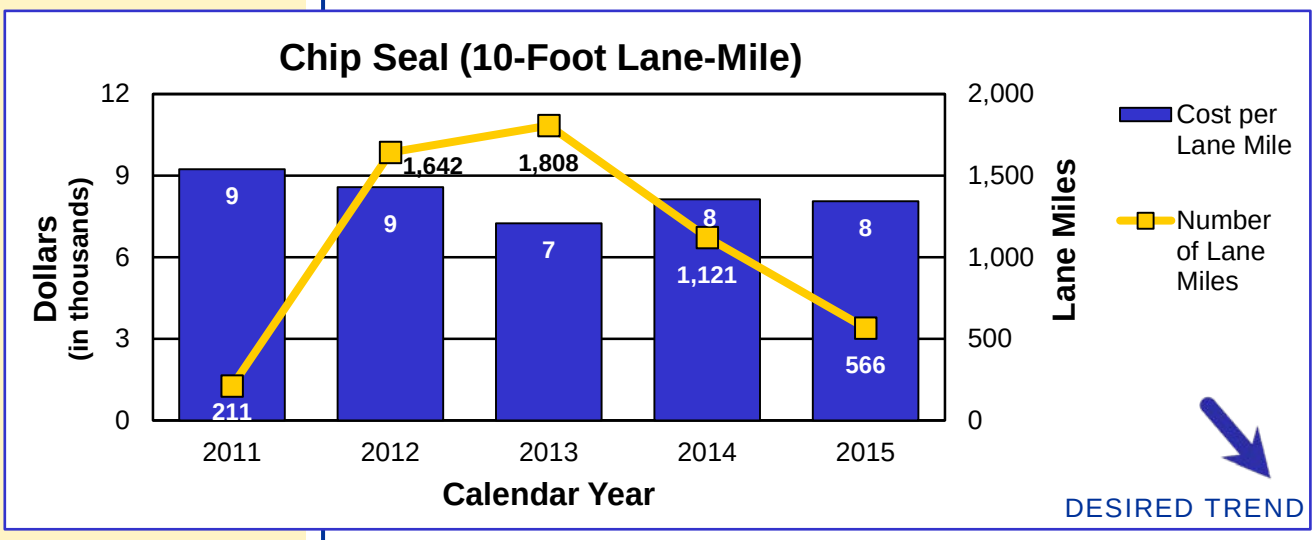

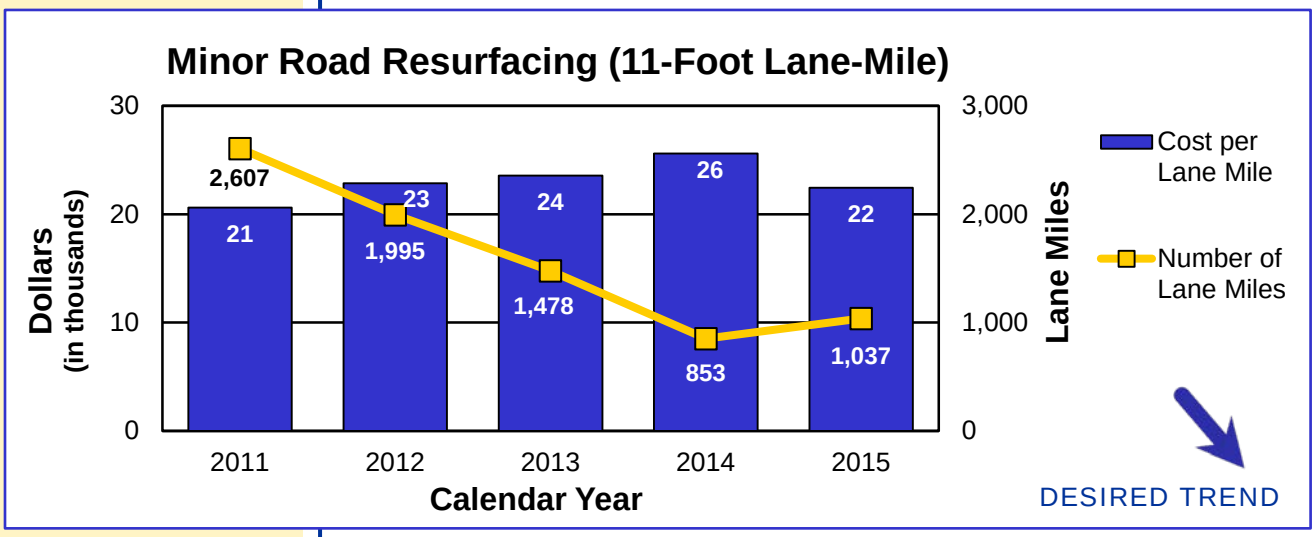

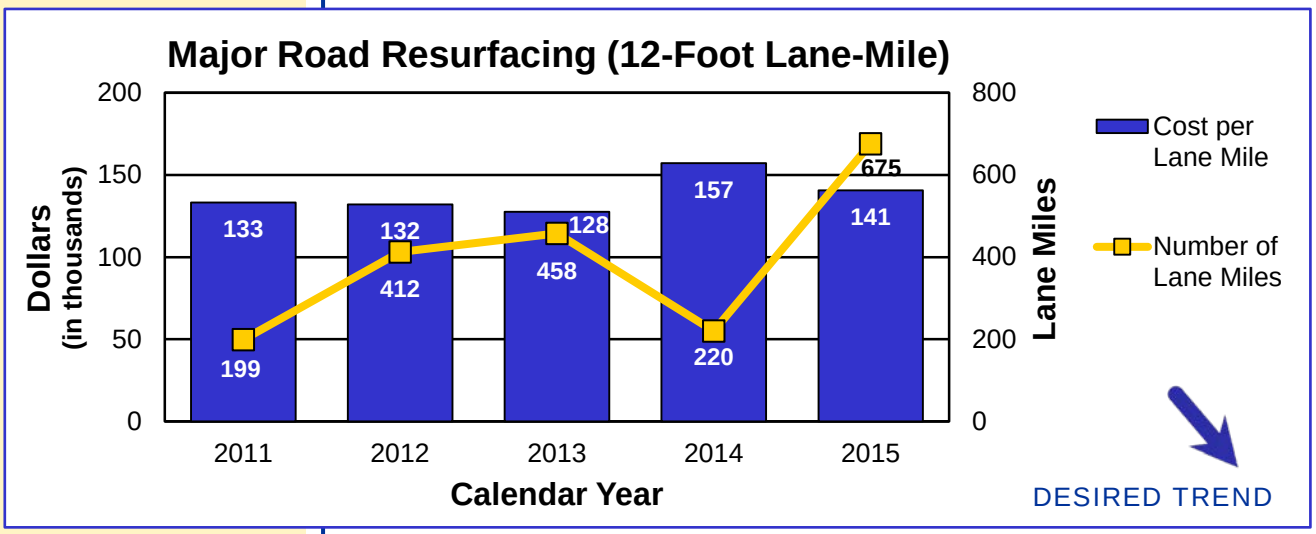

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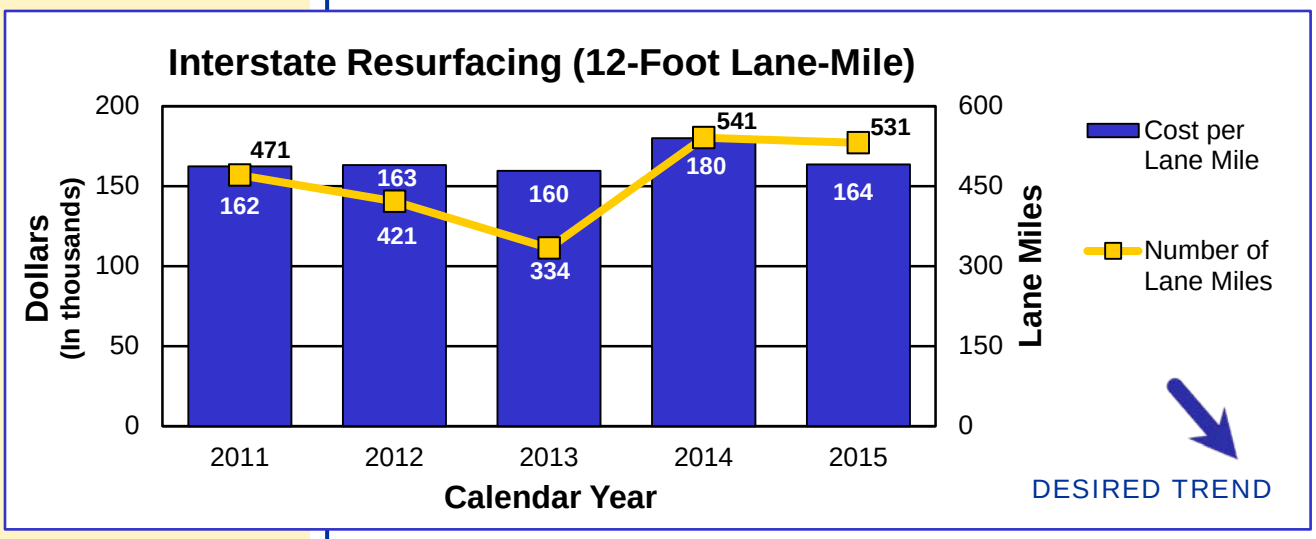
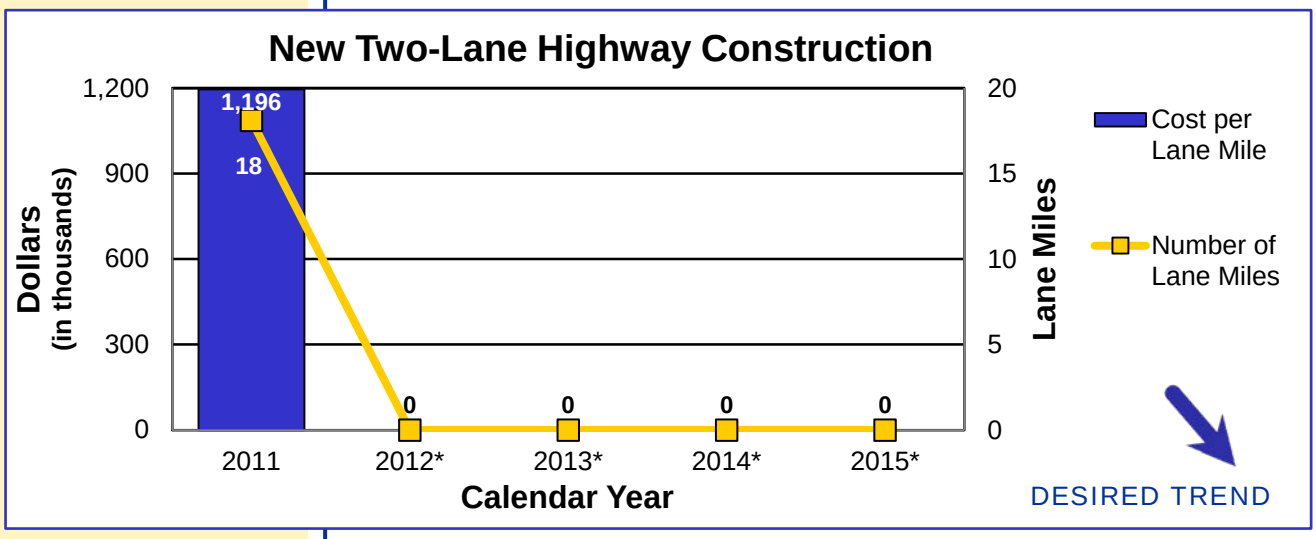
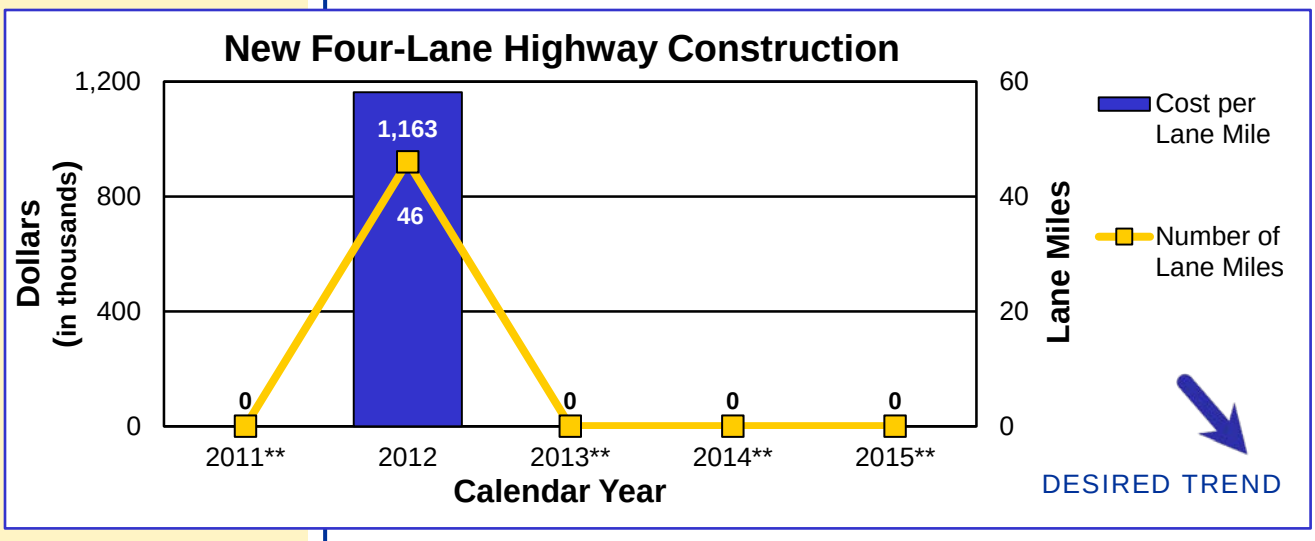




*** There were no two-lane projects bid in 2012, 2013, 2014 and 2015.**



****There were no four-lane projects bid in 2011, 2013, 2014 and 2015.**

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