



DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

David Silvester, District 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:
David Silvester,
District Engineer

DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

MEASUREMENT
DRIVER:
Renate Wilkinson,
Planning and Programming
Engineer

PURPOSE OF
THE MEASURE:
This measure determines
how close total project
completion costs are to the
programmed costs. The
programmed cost is consid-
ered the project budget.

MEASUREMENT
AND DATA
COLLECTION:
Completed project costs
are reported during the fis-
cal year in which a project
is completed. Road and
bridge project costs include
design, right-of-way pur-
chases, utilities, construc-
tion, inspection and other
miscellaneous costs. The
programmed cost is based
on the amount included
in the most recently ap-
proved Statewide Trans-
portation Improvement
Program. Completed costs
include actual expendi-
tures. Multimodal and local
public agency project costs
typically reflect state and/or
federal funds, but not local
funding contributed toward
such projects.

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

The focus on accurate program cost estimates has become increasingly important due to decreasing transportation funding and increasing costs. As of December 31, 2014, 177 road and bridge projects were completed in fiscal year 2015 at a cost of \$1.020 billion. This represents a deviation of 3.09 percent (or \$31 million) greater than the programmed cost of \$990 million. Of the 177 road and bridge projects completed, 64 percent were completed within or below budget. In comparison, 75 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 \$25 million.



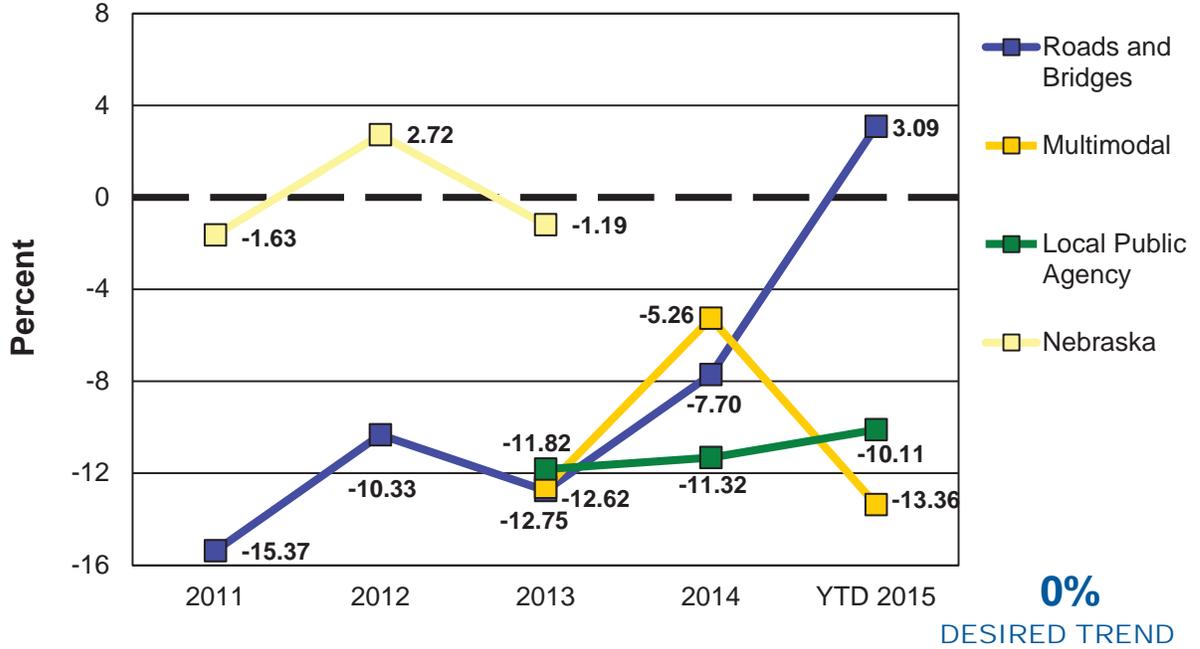
Miscellaneous savings (right of way, utilities and other costs) were \$14 million and construction savings were \$1 million. Award-phase deficits were \$71 million.

In addition, 38 multimodal projects were completed for a cost of \$17.02 million, -13.36 percent or \$2.62 million less than the programmed cost of \$19.64 million. A total of 86 local public agency projects were completed for a cost of \$40.82 million, -10.11 percent or \$-4.59 million less than the programmed cost of \$45.41 million.

MoDOT uses this historical data as a guide for programming future projects. In FY2014, MoDOT added 10 percent of available funding for highway and bridge construction awards or \$68.5 million worth of projects in anticipation of award savings. However, awards for FY2014 were 1 percent higher than programmed. Consequently, the 2015-2019 STIP was developed assuming no award savings. Awards for FY2015 year-to-date are 2 percent or \$8 million higher than programmed values.

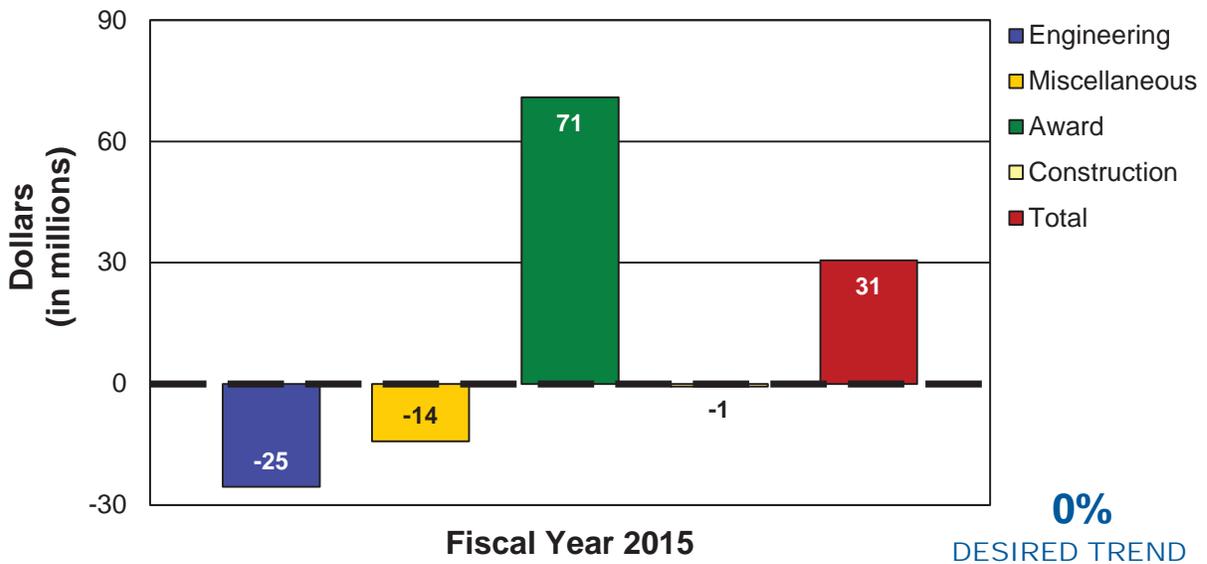
DELIVER TRANSPORTATION SOLUTIONS OF GREAT VALUE

Percent of Programmed Project Cost as Compared to Final Project Cost



Positive numbers indicate the final (completed) cost was higher than the programmed cost. Comparative data is from Nebraska Department of Roads, one-year schedule of highway improvement projects.

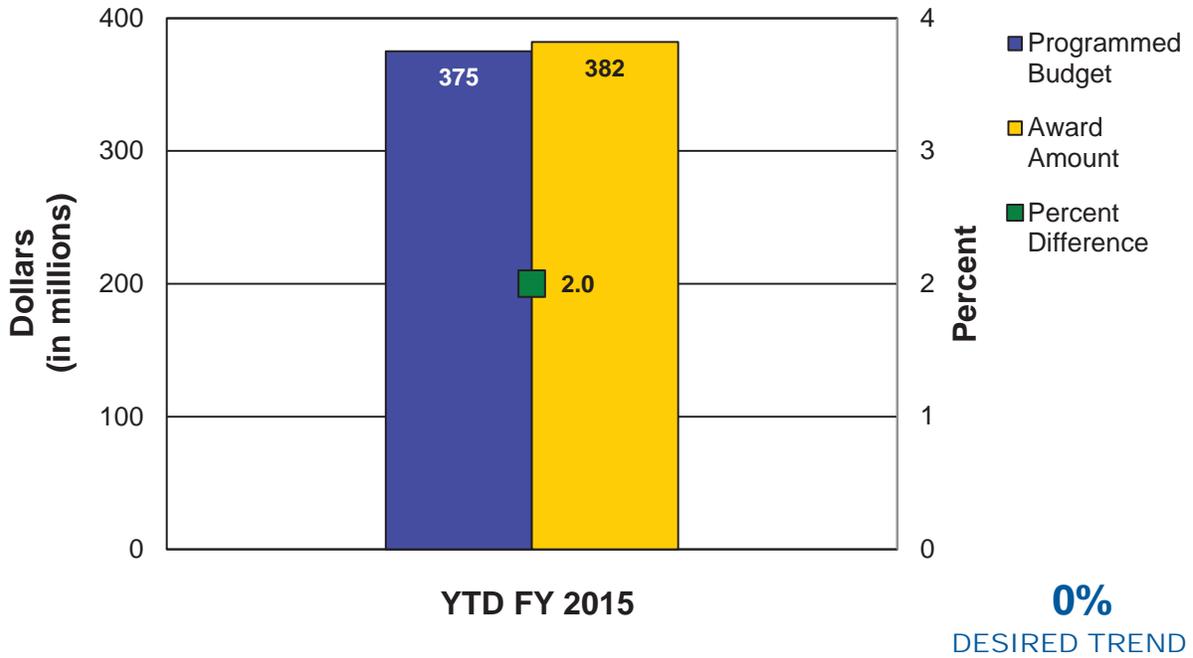
Final Project Cost Differences by Phase



Negative numbers indicate savings. Miscellaneous includes right of way, utilities and other costs. Amounts include STIP projects only.

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Percent of Difference in Program vs Award



Amounts include STIP projects with two percent construction contingency applied.

RESULT DRIVER:
David Silvester,
District Engineer

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MEASUREMENT DRIVER:
Jay Bestgen, Assistant State 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 date, and the resident engineers use 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.

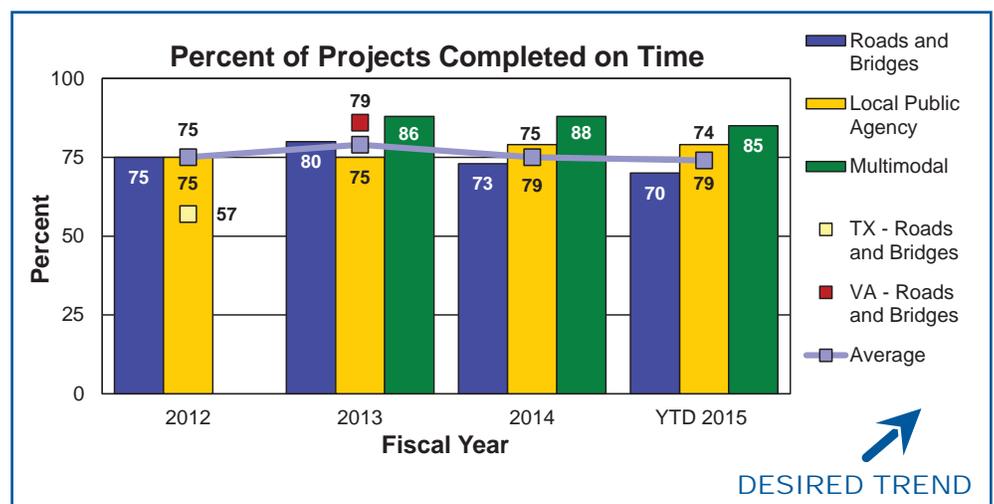
Percent of projects completed on time-4b

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 users. Completing projects on time helps maintain credibility which is of utmost importance to maintaining Missourians’ long-term support for times when more resources are needed to adequately maintain the transportation system. Completing projects on time minimizes user exposure to work zones and provides facilities in good condition that improve safety and reduce vehicle maintenance costs.

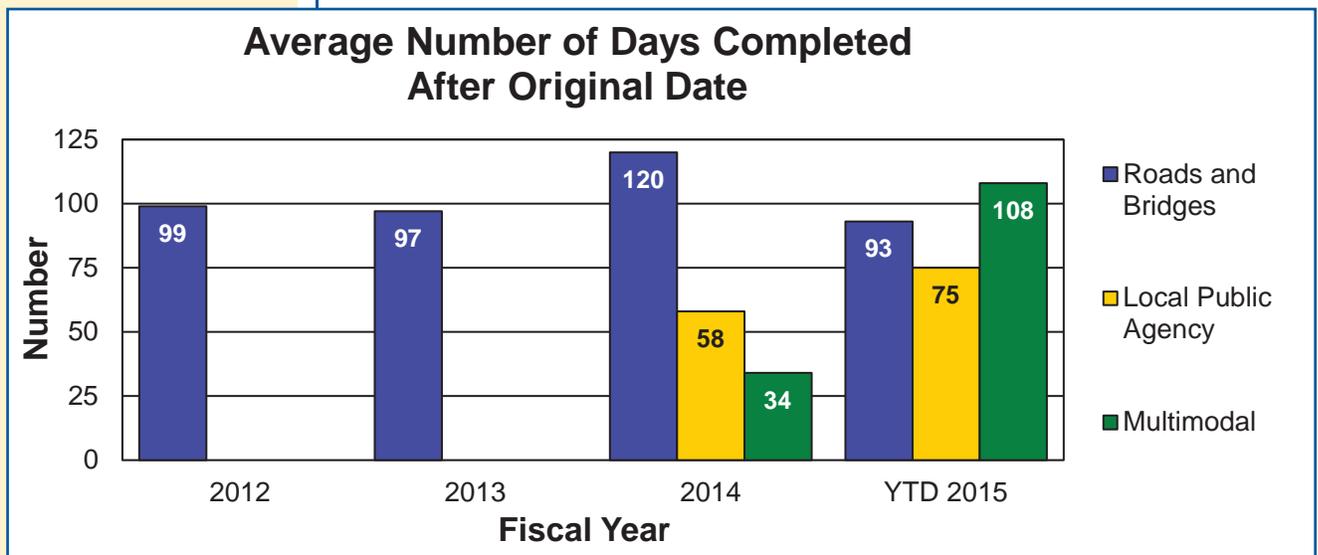
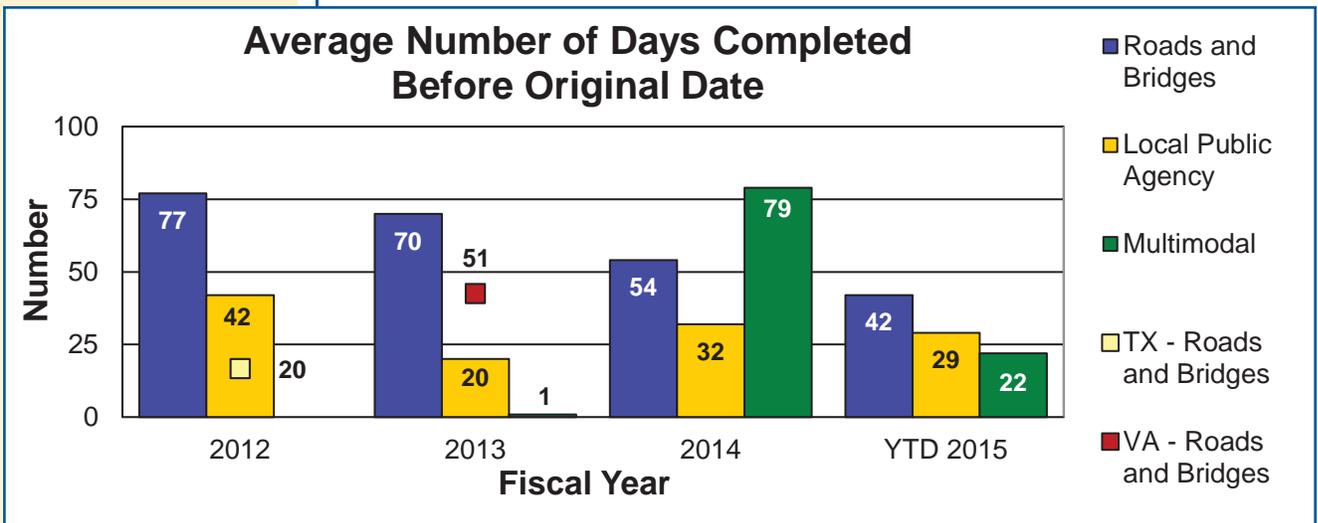
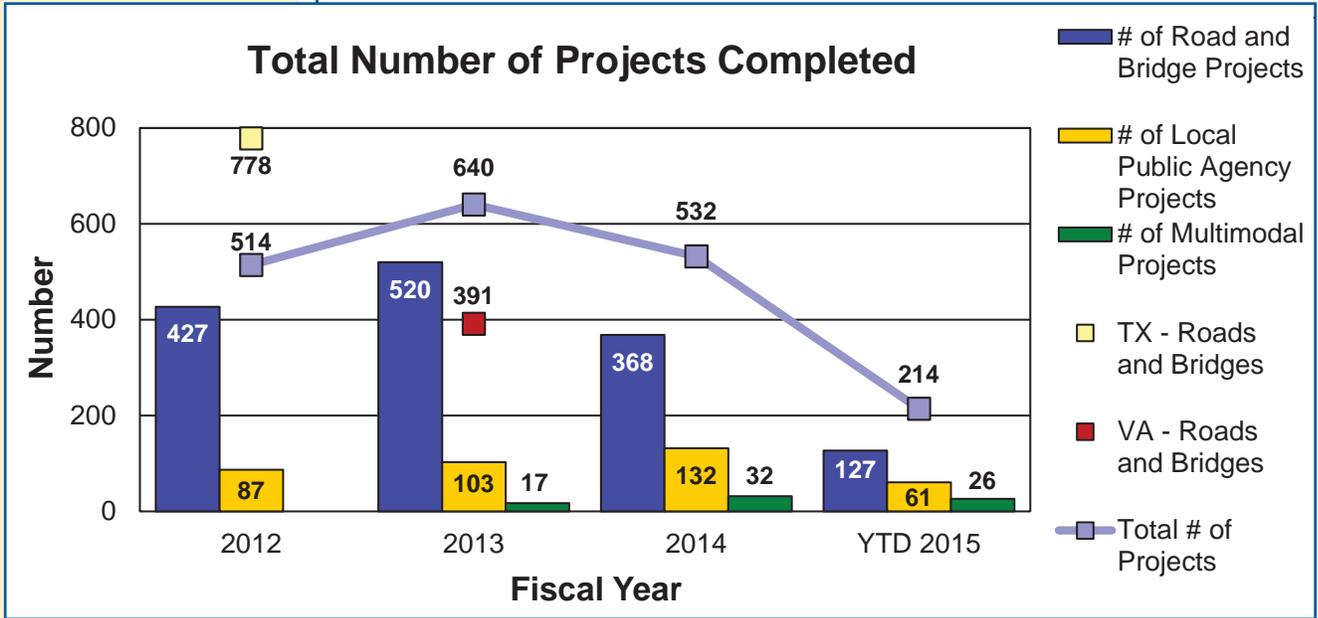
Sometimes, unusual weather or additional contract work necessitates an extension of the completion date. There also are times when a contractor misses the project completion date. In the first two quarters of fiscal year 2015, 74 percent of the projects were completed on or ahead of schedule.

MoDOT works to meet the original completion date by:

- Preparing accurate plans and quantities,
- Setting aggressive, but reasonable completion dates,
- Setting liquidated damages that reinforce completion date without undue bid risks,
- Discussing potential completion times with industry before setting, and
- Negotiating with contractor to maintain schedule.



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RESULT DRIVER:
David Silvester,
District Engineer

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MEASUREMENT DRIVER:

Jeremy Kampeter,
Construction Management
Systems Administrator

PURPOSE OF THE MEASURE:

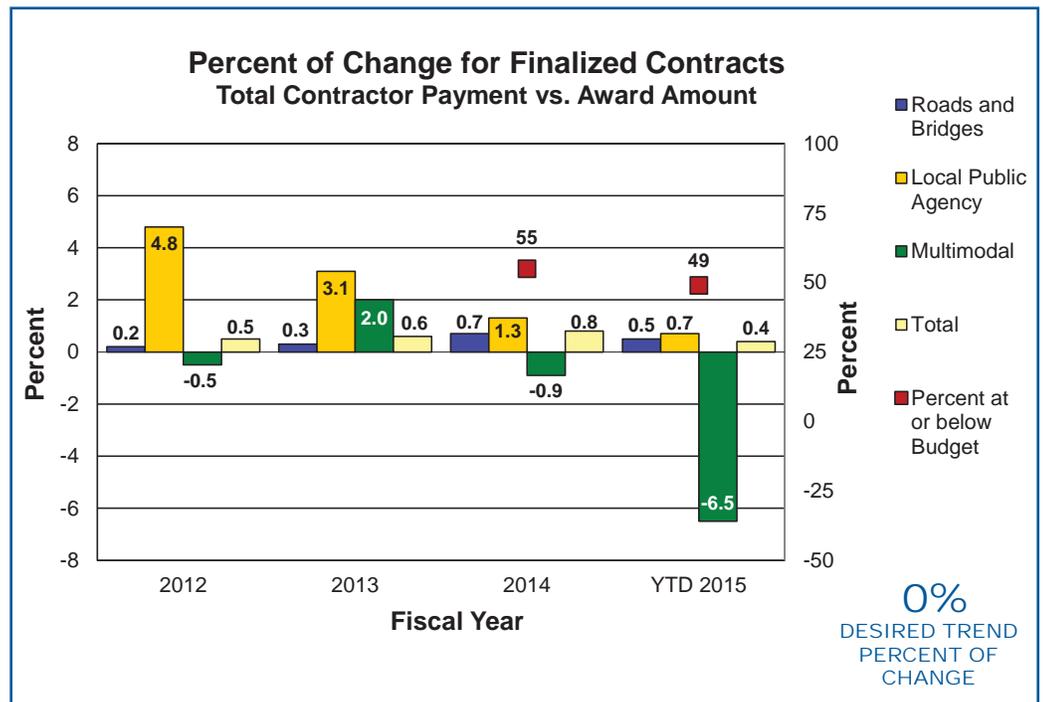
This measure tracks the percentage difference of total construction payouts to the original contract award amounts. This indicates how many changes are made on projects after they are awarded to the contractor. This measure evaluates road, bridge, local public agency and multimodal projects – rail, aviation, 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.

Percent of change for finalized contracts-4c

By limiting overruns on contracts, MoDOT can continue to keep its commitments. Decreasing transportation funding coupled with the increasing costs of products such as asphalt, concrete and steel has placed an even stronger emphasis on constructing projects within budget. 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 2015 was 0.4 percent (\$554 million worth of projects completed \$2.4 million over the award amount). Many factors can affect the ability to complete a project within 2 percent of the award amount.



RESULT DRIVER:
David Silvester,
District Engineer

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MEASUREMENT
DRIVER:
David Simmons,
Transportation
Project Manager

PURPOSE OF
THE MEASURE:
This measure tracks the
use of innovative contract-
ing methods on MoDOT
projects including:
■ A + B Contracts,
■ Alternate Technical
Concepts, and
■ Design-Build Contracts

MEASUREMENT
AND DATA
COLLECTION:
MoDOT projects utilizing in-
novative contracting meth-
ods are reported during the
fiscal year in which they are
awarded. Contract award
values are collected through
MoDOT's bid opening sum-
maries and project records.

Innovative contracting methods-4d

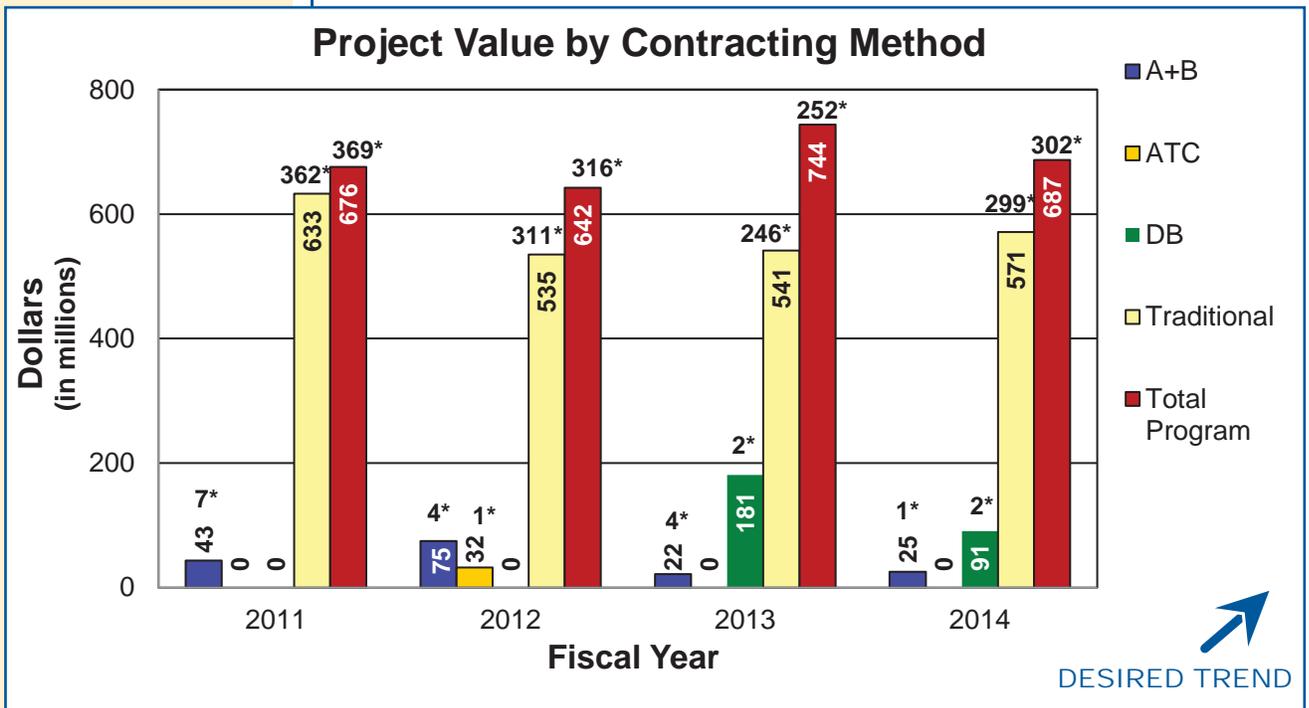
With decreasing transportation funding and increasing costs, MoDOT looks to implement non-traditional methods and practices in contract procurements to improve efficiency, increase flexibility and maximize value for its customers. By promoting the use of innovative contracting tools, MoDOT is better able to mitigate declining resources and meet each project's unique challenges and to provide the best-value solution to the needs being addressed. MoDOT uses innovative contracting to ensure the public receives full value for every tax dollar invested in Missouri's transportation system. However, dwindling resources will result in a dramatic reduction in the number of large-scale, system-improvement projects MoDOT can afford. Even with innovative contracting techniques, MoDOT will be challenged to simply maintain the current system.

When selecting a project delivery method and innovative contracting options, MoDOT takes into account project characteristics (risks) such as project size (cost), type (preservation, rehabilitation or reconstruction) and complexity (urban or rural, significant traffic impact, number of project elements). Innovative contracts promote accelerated project completion or facilitate achievement of other performance objectives. MoDOT's A+B, ATC and Design-Build contracting methods change how projects are procured and delivered. The advantages of MoDOT's innovative contracting methods are as follows:

- 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 an alternate more-cost-effective design prior to the bid. ATC discussions are held in a confidential environment which maximizes competitive bidding. The low bid is awarded the contract.
- 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" scoring scenario. Nationally, Design-Build projects are completed 33 percent faster and 6 percent cheaper than conventional Design-Bid-Build projects.

In fiscal year 2014, MoDOT delivered three out of 302 projects using innovative contracting methods, with two being delivered as Design-Build and one being delivered as A + B. The three projects accounted for \$115 million of the \$687 million program.

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*Reflects total number of projects for each innovative contract method

RESULT DRIVER:
Dave Silvester,
District Engineer

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MEASUREMENT
DRIVER:
Llans Taylor,
Innovations Engineer

PURPOSE OF
THE MEASURE:
This measure tracks the
use of value engineering
during design and construc-
tion on traditional MoDOT
projects including:
■ Value analysis during the
design phase, and
■ Construction value en-
gineering proposals during
the construction phase.
■ Implementation of best
practice into our standards
and policies.

MEASUREMENT
AND DATA
COLLECTION:
Information on value analy-
sis during design is gath-
ered from MoDOT's STIP
information management
system. Construction value
engineering change pro-
posal information is gath-
ered from MoDOT's VECP
database. Implementation
of best practice progress is
tracked by MoDOT staff.

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. Due to decreasing funding, MoDOT is 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.

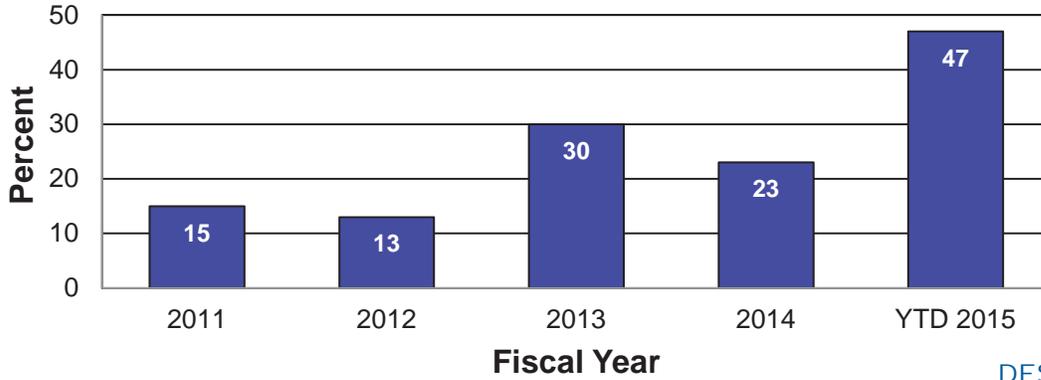
MoDOT uses design-phase value analysis to remove unnecessary scope, reduce project costs and to improve project flexibility. Value analysis includes specific, targeted processes aimed to improve the project value, including the formal VE program studies. Tracking progress toward the goal of evaluating all projects for value allows MoDOT to accurately gauge its performance. For the first two quarters of FY2015, 47 percent of projects underwent some form of value analysis during design. A significant portion of this progress was a direct result of programmatic value analysis studies associated with the level-course and chip-seal programs.

MoDOT partners with industry to find more cost-effective methods to accomplish proposed project work. During the construction phase, the VECP process encourages contractors to submit proposals to deliver improved projects. After award of a project, contractor proposals are considered. If accepted, contractors receive up to a maximum of 50 percent of the savings. For the first two quarters of FY2015, 17 VE proposals were approved resulting in MoDOT savings of \$876,000. Although still low in comparison to a five-year average, this does compare favorably to the first two quarters of FY2014 in which there were 17 approved VE proposals for a total savings of \$560,000. As an effort to ensure each submittal has the greatest opportunity for approval, MoDOT has adopted engineering policy changes to allow contractors a second review of any denied submittals.

A successful VECP program incorporates approved VECPs into future projects, so MoDOT can realize all of the affiliated savings. A multi-disciplinary team reviews approved VECPs in order to integrate the approved concepts into engineering policies, standards and specifications. In addition to previous reviews of fiscal years 2012 and 2013, the team has considered each approved VECP approved in fiscal year 2014 to determine if there was an opportunity to improve the way MoDOT does business. To date, 167 approved VECPs have been reviewed with two changes implemented and 24 potential revisions still being investigated. The team continues to meet to review approved VECPs for potential implementation and works to develop improved policies.

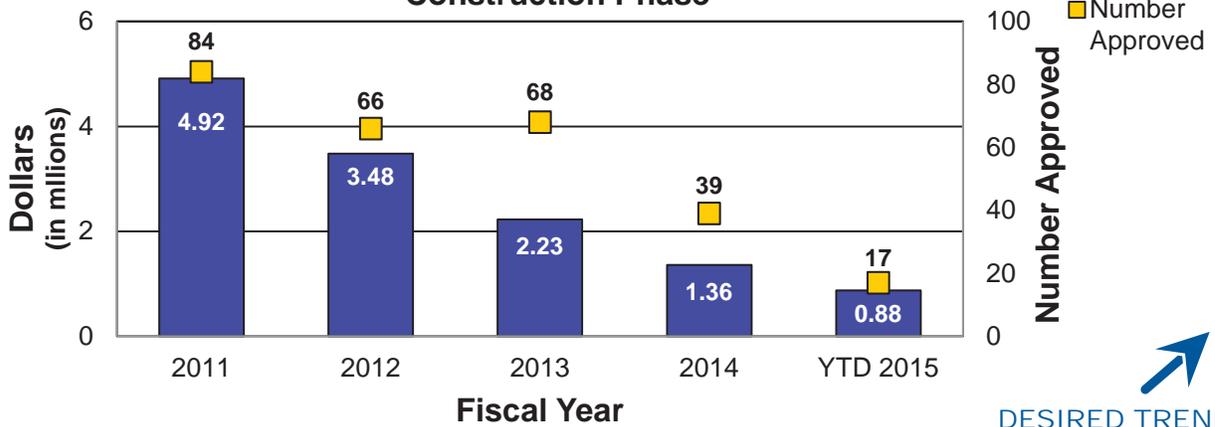
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Percent of Awarded Projects with Value Analysis Design Phase



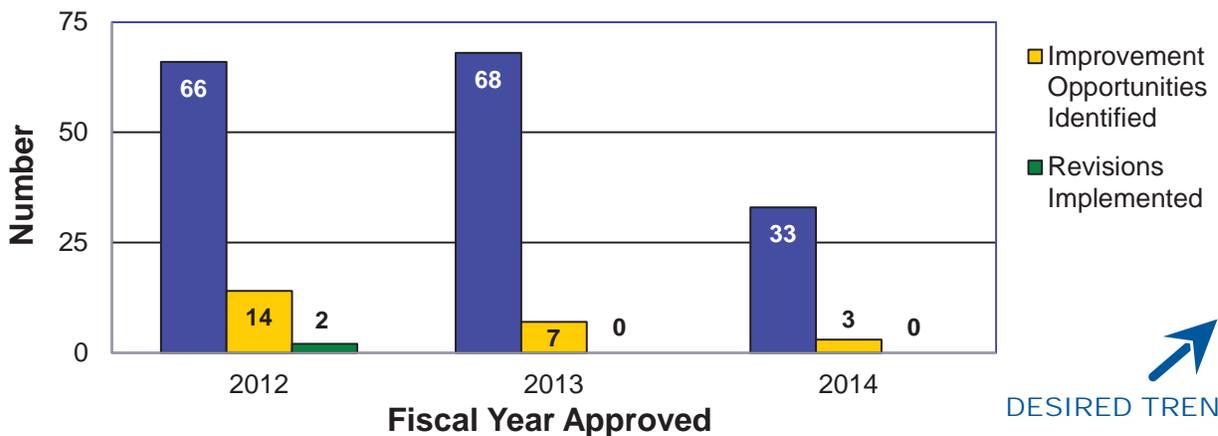
DESIRED TREND

Value Engineering Change Proposals by Dollar and Number Construction Phase



DESIRED TREND

Value Engineering Changes Implemented as Best Practice



DESIRED TREND

RESULT DRIVER:
David Silvester,
District Engineer

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MEASUREMENT
DRIVER:
Jason Vanderfelt,
Bidding and Contract
Services Engineer

PURPOSE OF
THE MEASURE:
This measure tracks the
costs to construct a variety
of common highway and
bridge construction proj-
ects 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.
Construction costs for 1992
are used for comparison
because that was the year
Missouri's fuel tax was
increased to the current rate
of 17 cents per gallon. Costs
for chip seal and minor road
one-inch asphalt resurfacing
include the pavement, traffic
control and temporary pave-
ment marking. Costs for ma-
jor highway and interstate
asphalt resurfacing include
the pavement, traffic control,
permanent pavement mark-
ing, rumble strips, pavement
repair, guardrail and signing.
New two-lane and four-lane
construction costs include
grading, drainage, pave-
ment, bridge and all incident-
al 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 sim-
plify comparison.

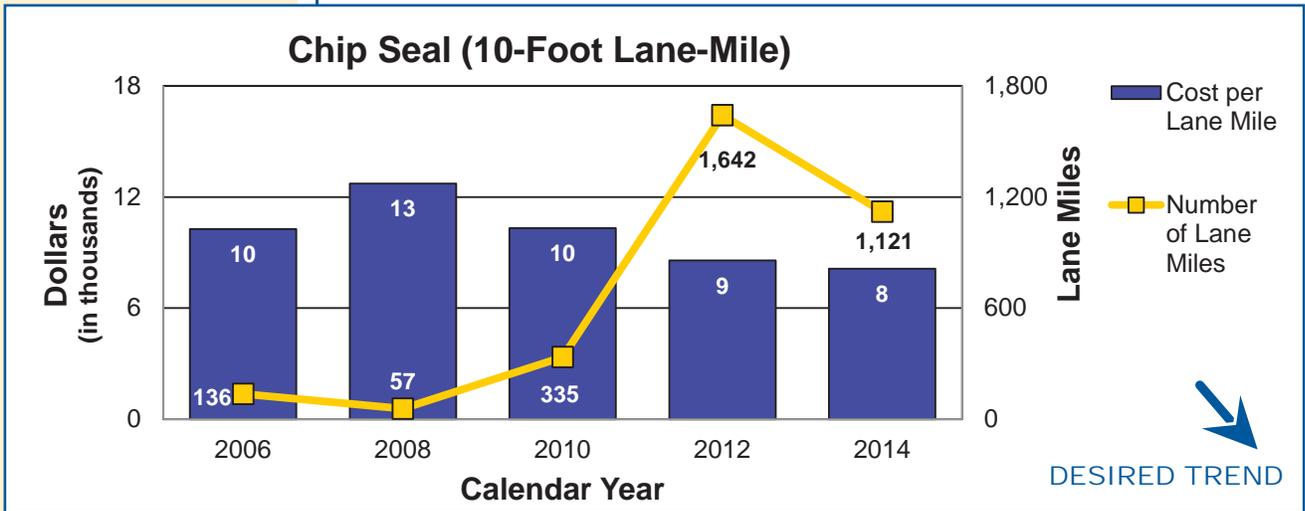
Average highway lane-mile and bridge construction costs-4f

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 look for ways to decrease their personal transportation costs by driving less and turning to smaller, more fuel-efficient vehicles. Since these vehicles cost less, sales taxes are lower, resulting in lower 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 and triple what they were 20 years ago.

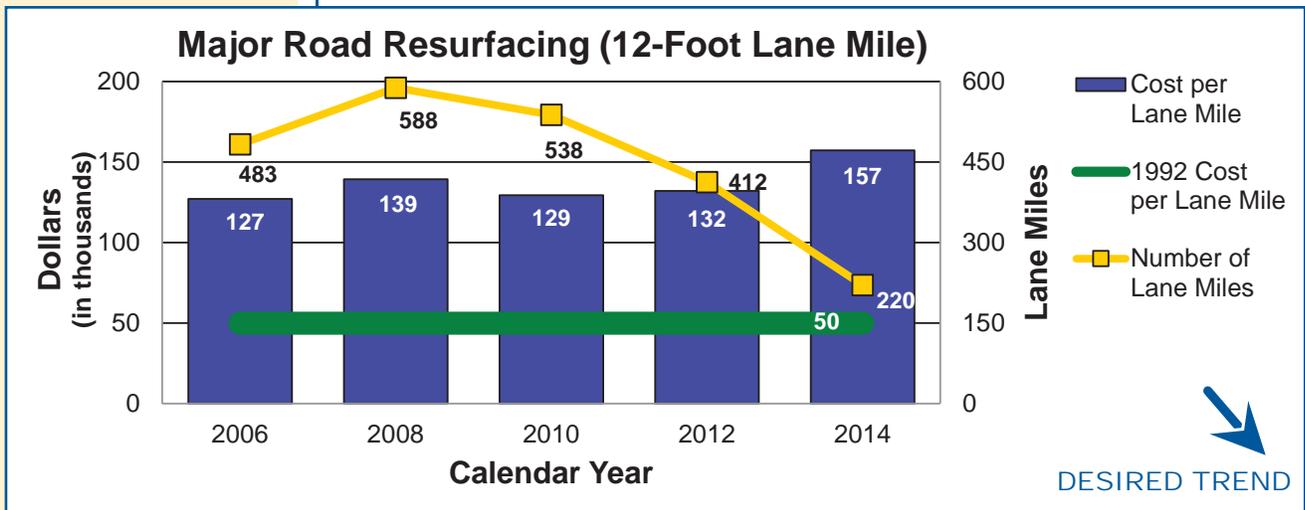
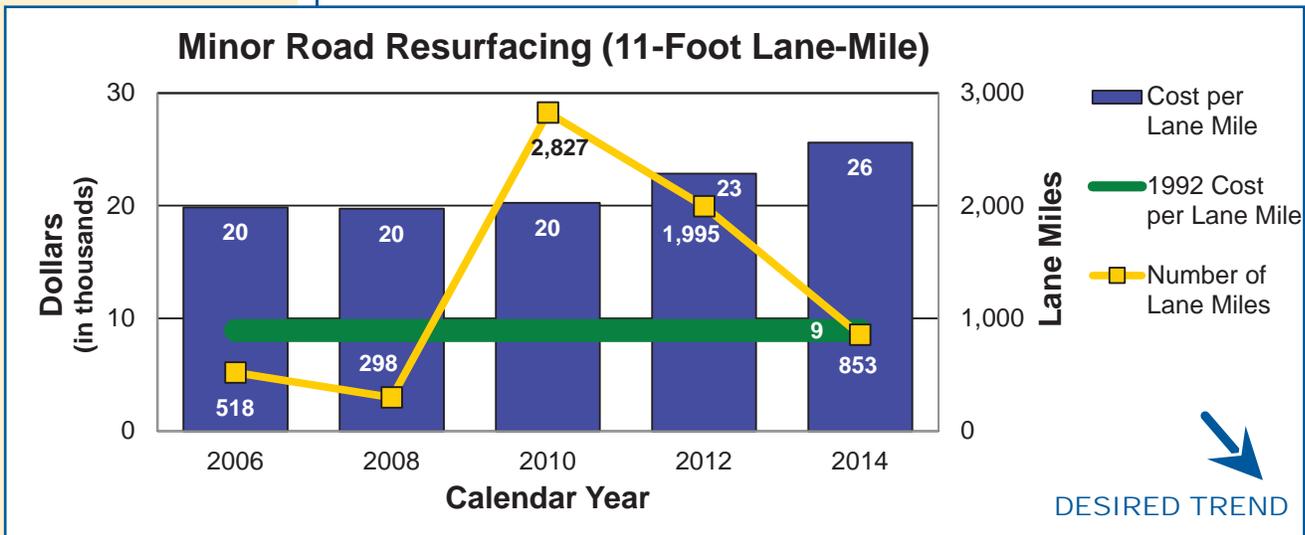
With MoDOT's construction program having dropped from \$1.3 billion in 2009 to \$720 million in fiscal year 2015, few complex two- and four-lane projects have been available for contractors to bid. For the larger, more robust projects, MoDOT continues to partner with industry to allow flexibility and encourage innovation while strategically scheduling bid openings to spread out the amount of work and financial obligation for the bidders. With decreasing revenue and increasing costs, MoDOT is challenged to make improvements to the existing system. MoDOT is being challenged just to maintain the system of roads and bridges Missourians enjoy today.



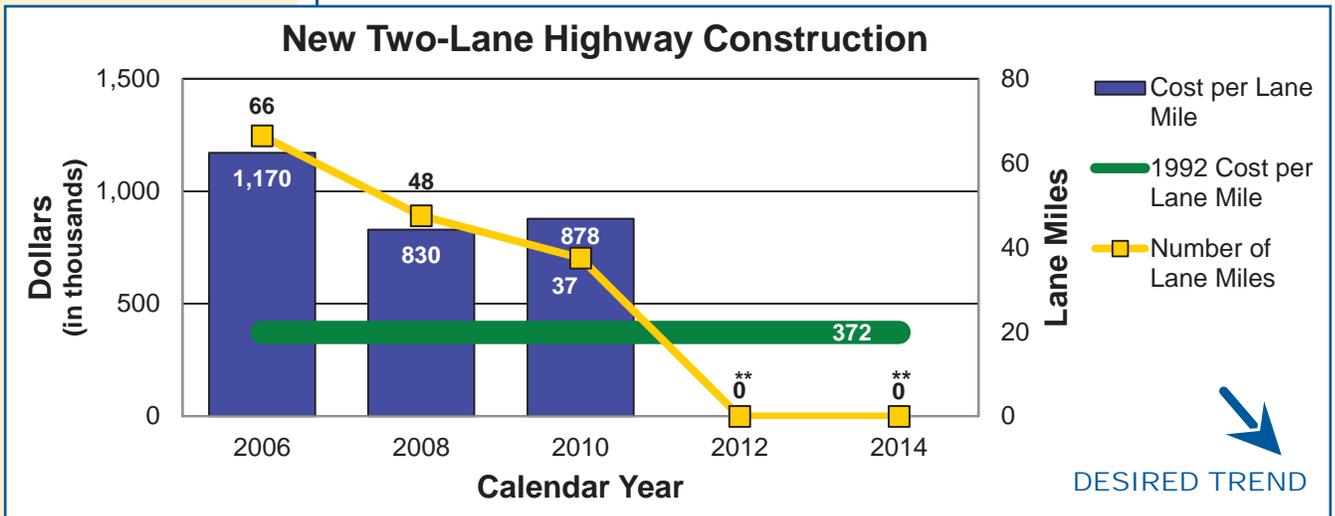
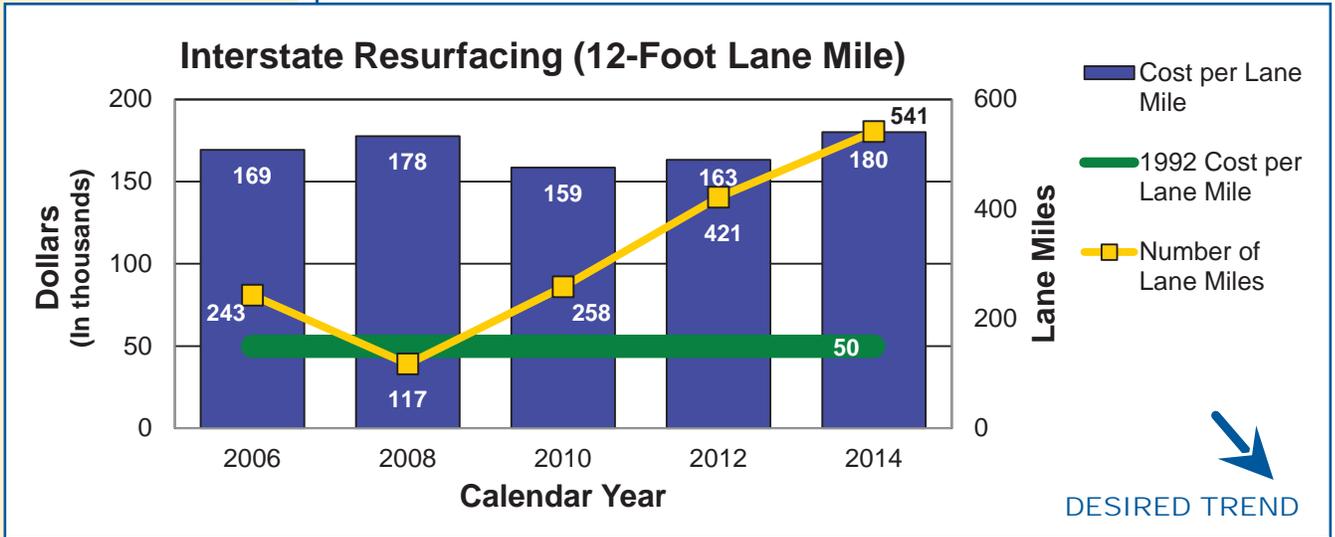
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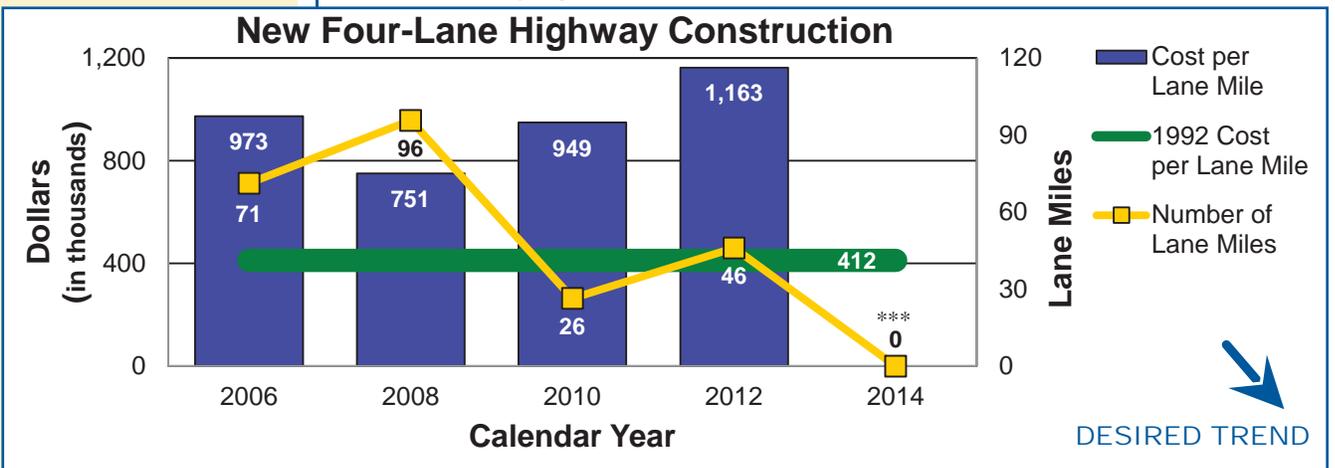
Note: No contract chip seal projects in 1992.



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** No two-lane projects bid in 2012, 2013, and 2014.



*** No four-lane projects bid in 2013 and 2014.

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