

Fast Projects That Are of Great Value

*Tangible Result Driver – Dave Nichols,
Director of Program Delivery*

MoDOT customers expect that transportation projects be completed quickly and provide major improvements for travelers. MoDOT will honor project commitments because it believes in integrity.



Fast Projects That Are of Great Value

Percent of estimated project cost as compared to final project cost

Result Driver: Dave Nichols, Director of Program Delivery

Measurement Driver: Renate Wilkinson, Planning and Programming Engineer

Purpose of the Measure:

This measure determines how close MoDOT's total program completion costs are to the estimated costs.

Measurement and Data Collection:

MoDOT determines the completed project costs and compares them to the estimated costs. The completed project costs are reported during the fiscal year in which the project is completed.

Project costs include design, right of way purchases, utilities, construction, inspection and other miscellaneous costs. The estimated cost is based on the amount included in the most recently approved Statewide Transportation Improvement Program. Completed costs include actual expenditures. The costs do not include those that might result from any legal claims, which are rare occurrences, regarding the projects after they are completed. Positive numbers indicate the final (completed) cost was higher than the estimated cost.

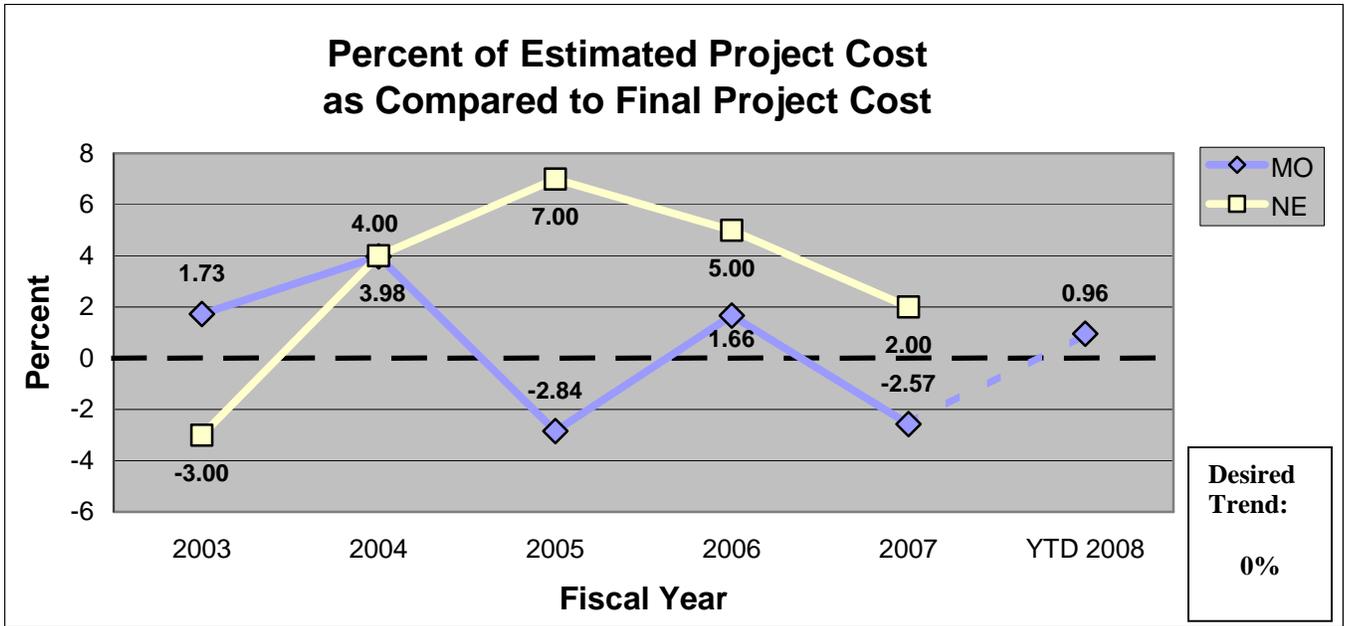
This is an annual measure updated each quarter. In November of each year, this data is provided to the Missouri Legislature through the Report to the Joint Committee on Transportation Oversight.

Improvement Status:

As of December 31, 2007, for fiscal year 2008, a total of 249 projects were completed at a cost of \$491.1 million. This represents a deviation of 0.96 percent or \$4.7 million more than the estimated cost of \$486.4 million. While most projects have completed costs that vary from the estimated costs, these variations are canceling each other out.

The increased cost trend through fiscal year 2004 reflects the increased number of projects awarded in fiscal years 2002 and 2003. The increased work volume resulted in higher awards and overall costs. The decrease in 2005 can be attributed to the lower work volume and increased competition among contractors. The increase in 2006 can be primarily attributed to inflationary pressures. The ideal status is no deviation in the estimated vs. final project cost, or 0 percent.

While a number of states track construction costs, few provide data for total project costs. Fewer still compare estimated total project costs to final total project cost. The following graph shows how MoDOT performance compares with neighboring Nebraska*. In 2004 the performance of both states was nearly the same. In other years, it varied substantially. Data for Nebraska is updated annually.



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

*Data from Nebraska Department of Roads one-year schedule of highway improvement projects.

Fast Projects That Are of Great Value

Average number of years it takes to go from the programmed commitment in the Statewide Transportation Improvement Program to construction completion

Result Driver: Dave Nichols, Director of Program Delivery

Measurement Driver: Machelles Watkins, Transportation Planning Director

Purpose of the Measure:

This measure monitors how quickly projects go from the programmed commitment to construction completion.

Measurement and Data Collection:

MoDOT compares how long it takes from when the project is added to the Statewide Transportation Improvement Program to when the project is completed. Data is categorized by the type of work, and distinguishes between design and construction stages.

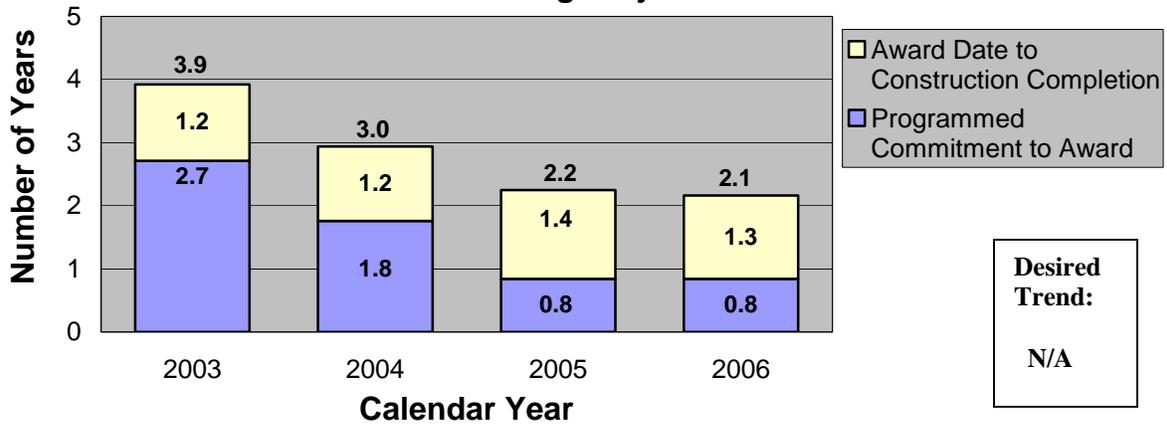
This is an annual measure and data is updated in October.

Improvement Status:

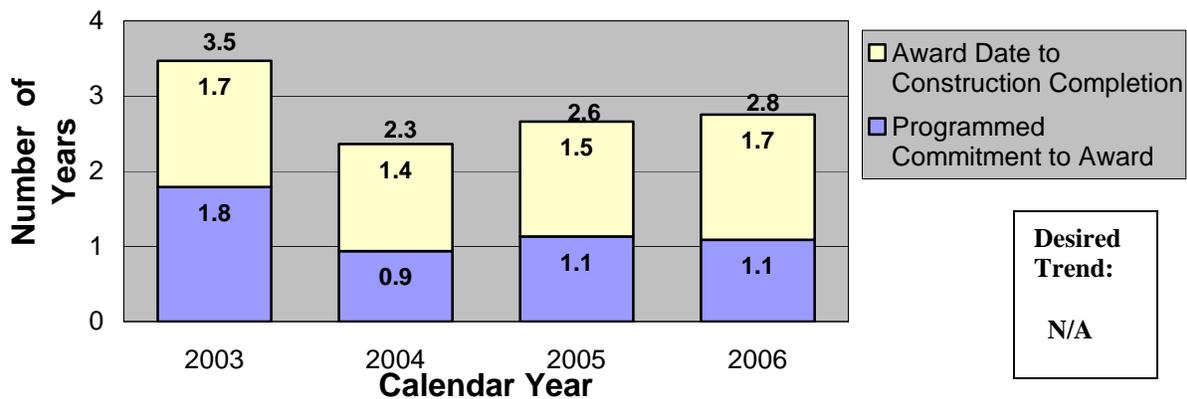
In general, resurfacing and safety projects take the least amount of time to develop and complete, around two years. New or improved bridge projects take more time, around four years. New or expanded highways take yet more time, from five to eight years. Major bridge projects take the most time, from seven to 11 years to develop and complete.

Design time for New/Improved Bridges increased from an average of 1.9 years to 2.8 years. This is due to an ongoing effort to fully program the first three years of the STIP. The construction time average for New/Expanded Highways increased from an average of 3.2 years to 3.9 years. Projects with unusually long construction periods have been identified and are being coordinated with other divisions to pinpoint causes or issues relating to those projects. Data samples for Major Bridges are usually very small, which allows for one to two projects to affect the averages that are reported. In 2005 only two Major Bridge projects were completed, compared with 10 projects in 2006. Year-to-year changes in Major Bridge averages are the result of these small data samples.

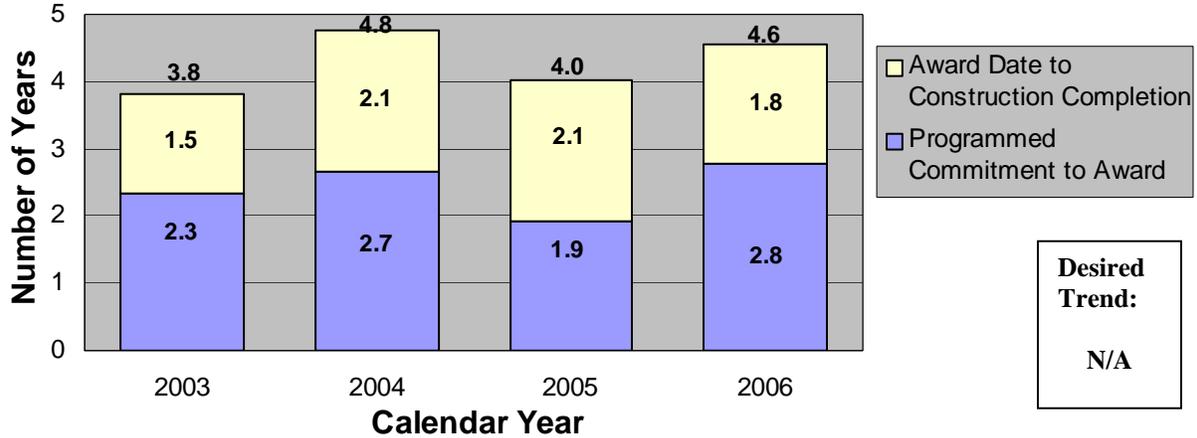
**Average Number of Years it Takes to Go from the
Programmed Commitment in the STIP to
Construction Completion
Resurfacing Projects**



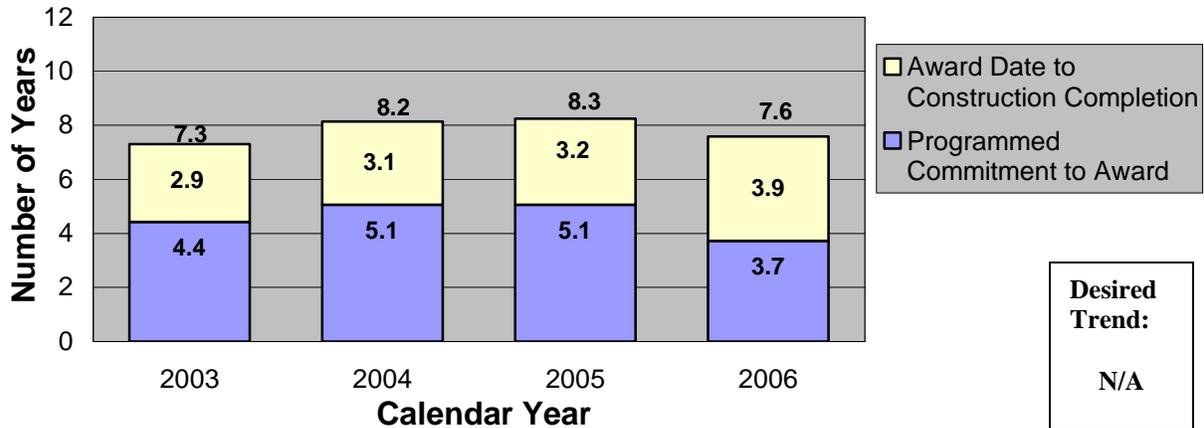
**Average Number of Years it Takes to Go from the
Programmed Commitment in the STIP to
Construction Completion
Safety and Other Projects**



**Average Number of Years it Takes to Go from the
Programmed Commitment in the STIP to
Construction Completion
New/Improved Bridge Projects**

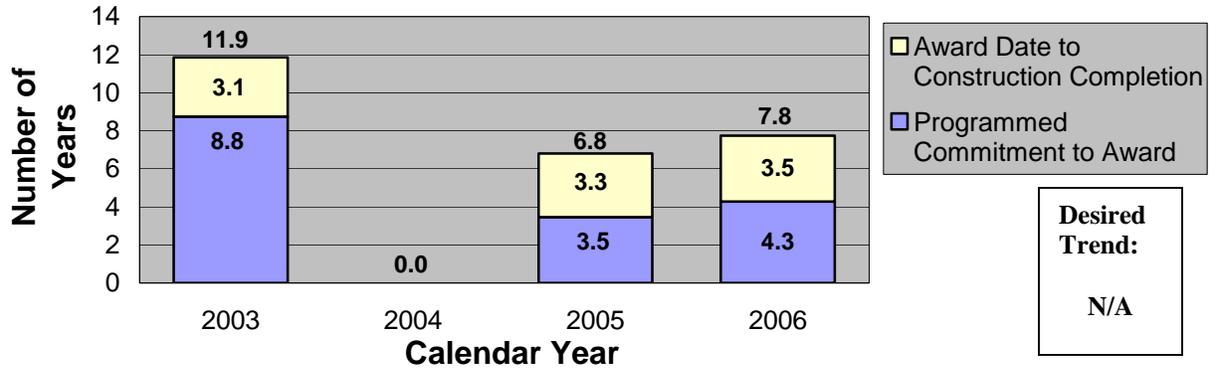


**Average Number of Years it Takes to Go from the
Programmed Commitment in the STIP to Construction
Completion
New/Expanded Highway Projects**



Average Number of Years it Takes to Go from the Programmed Commitment in the STIP to Construction Completion

Major Bridge Projects



Fast Projects That Are of Great Value

Percent of projects completed within programmed amount

Results Driver: Dave Nichols, Director of Program Delivery

Measurement Driver: Dave Ahlvers, State Construction & Materials Engineer

Purpose of the Measure:

The measure tracks the percentage of projects completed within the programmed amount. It includes separate categories for projects over and under one million dollars.

Measurement and Data Collection:

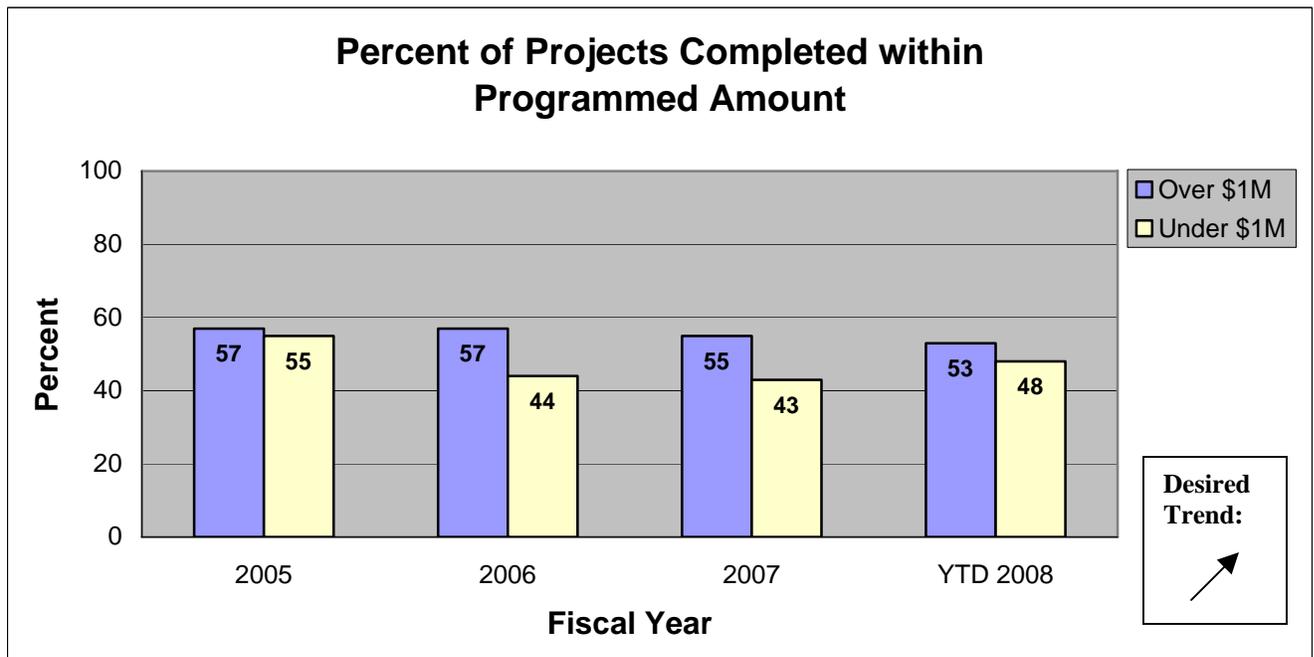
The completed project cost is compared to the estimated cost for each project. The percentage of projects completed within the estimated cost is gathered from across the state.

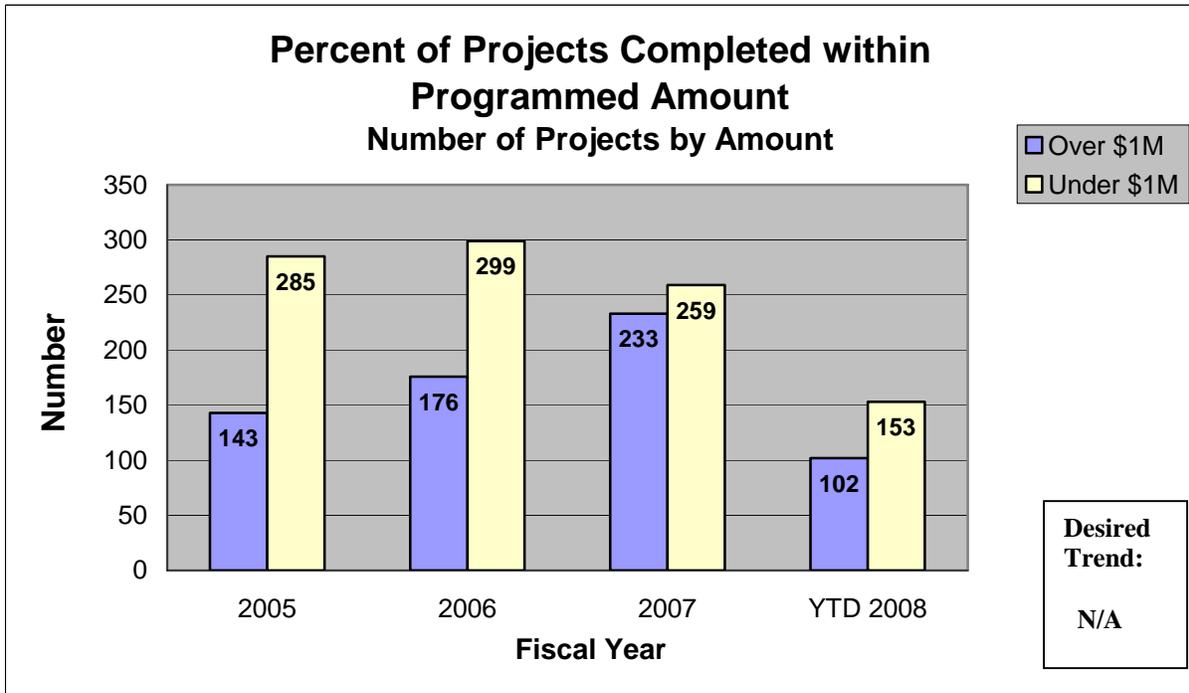
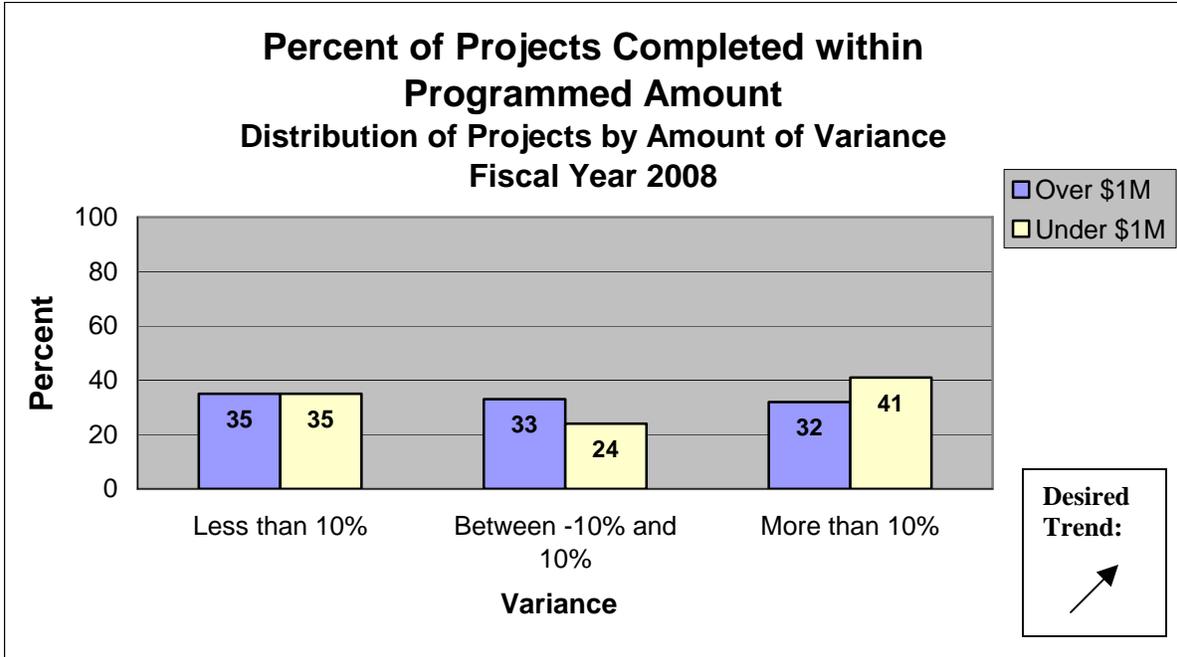
Project costs include design, right-of-way purchases, utilities, construction payments, inspection and other miscellaneous costs.

This is an annual measure updated each quarter.

Improvement Status:

MoDOT would like to see all projects completed within the programmed amount. The goal is to deliver projects at the programmed amount, allowing the greatest number of projects to be built with the funding available. MoDOT's data indicates that there is a great deal of deviation among individual projects with half over and half under budget. So far in fiscal year 2008, 53 percent of projects programmed over \$1 million were completed within the budgeted amount, while 48 percent of projects under \$1 million came in at or below budget. Emphasis has been placed on scoping projects and developing estimates that represent the true cost of delivering the projects. MoDOT is striving to deliver quality projects cheaper by using practical design and by encouraging the use of value engineering.





Fast Projects That Are of Great Value

Percent of projects completed on time

Results Driver: Dave Nichols, Director of Program Delivery

Measurement Driver: Dave Ahlvers, State Construction & Materials Engineer

Purpose of the Measure:

This measure tracks the percentage of projects completed by the commitment date established in the contract. Adjustments to the completion date are made when additional work is required or for unusual weather occurrences. It indicates MoDOT's ability to complete projects by the agreed upon date.

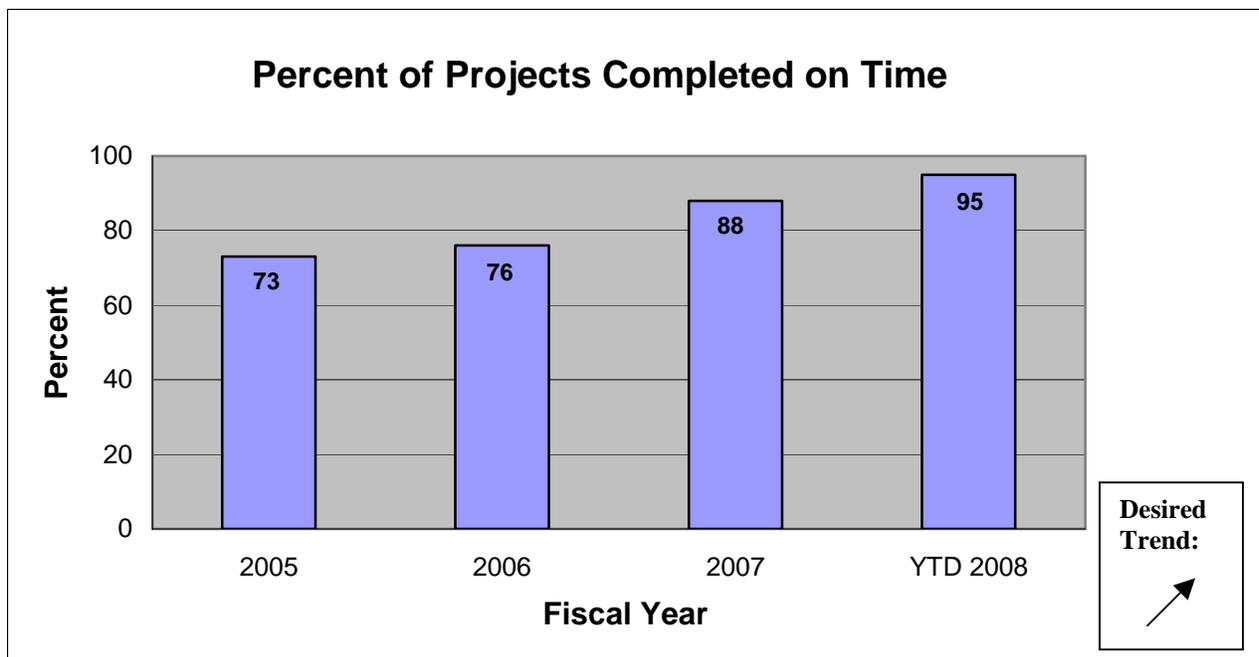
Measurement and Data Collection:

The project manager will establish project completion dates for each project. They are documented in MoDOT's SiteManager and STIP databases. It will be part of the Plans, Specifications & Estimates submittal. The actual completion date will be documented by the resident engineer and placed in MoDOT's project management system.

This is an annual measure updated each quarter.

Improvement Status:

The results indicate a seven percent increase from fiscal year 2007 in the percent of projects completed on time. MoDOT has focused on reducing the number of days available for construction in order to reduce congestion and inconvenience to the traveling public, while stressing the importance of completing projects on time. To achieve timely completion of improvement projects, an emphasis has been placed on reviewing construction schedules and assessing liquidated damages.



Fast Projects That Are of Great Value

Percent of change for finalized contracts

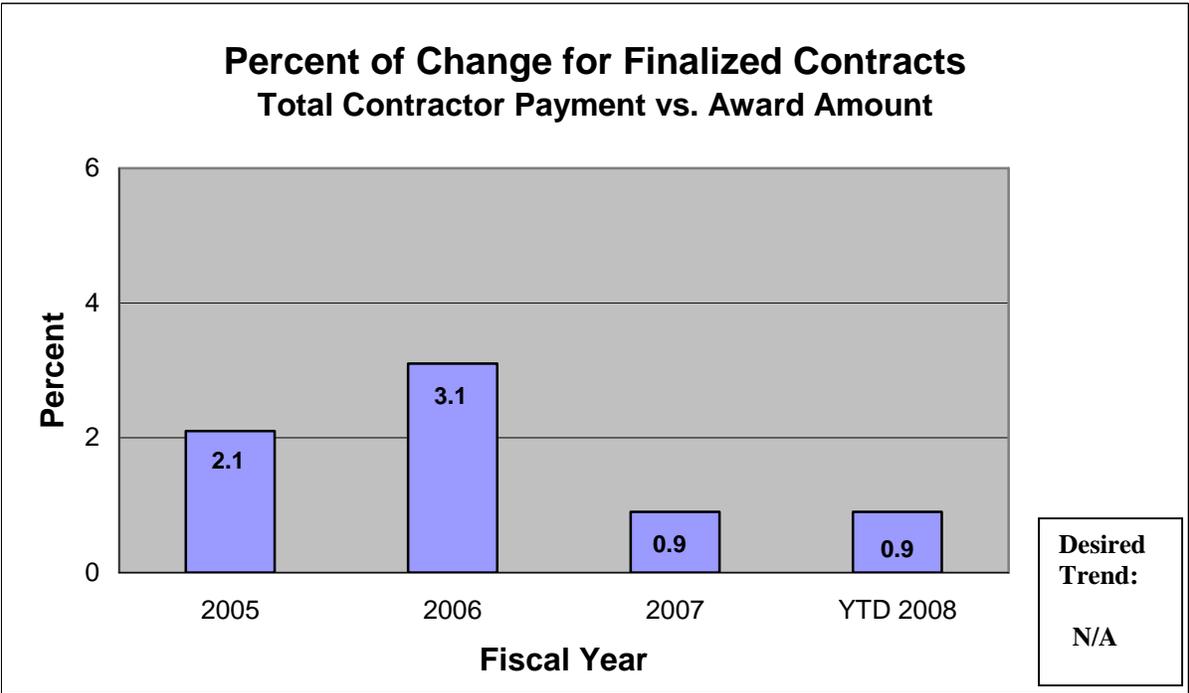
Results Driver: Dave Nichols, Director of Program Delivery
Measurement Driver: Dave Ahlvers, State Construction & Materials Engineer

Purpose of the Measure:
The 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.

Measurement and Data Collection:
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.

This is an annual measure updated each quarter.

Improvements Status:
MoDOT's performance of 0.9 percent in the first two quarters of fiscal year 2008 was well below the target of 2 percent. The overall improvement is a result of a strong emphasis placed on constructing projects within budget, the use of practical design and value engineering. By limiting overruns on contracts, MoDOT can deliver more projects, leading to an overall improvement of the entire highway system. The Performance Plus employee incentive program has placed additional emphasis on completion of projects within budget.



Fast Projects That Are of Great Value

Average construction cost per day by contract type

Results Driver: Dave Nichols, Director of Program Delivery

Measurement Driver: Dave Ahlvers, State Construction & Materials Engineer

Purpose of the Measure:

This measure tracks the cost per day for project completion to determine the impact to the traveling public, enabling MoDOT to better manage project completion needs.

Measurement and Data Collection:

This information is gathered by extracting the actual time used for construction from the summary of days used in the SiteManager database and dividing it by the total costs of the project.

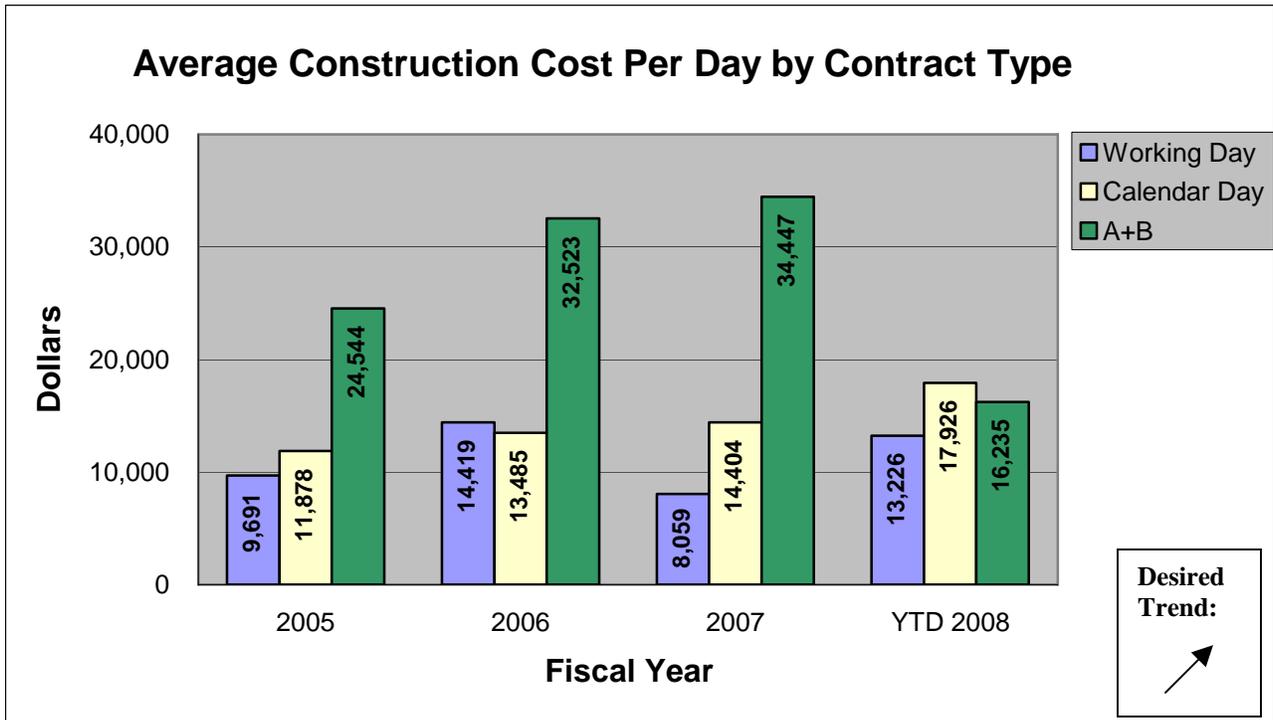
The measurement groups construction contracts into three categories:

- **WD** working day contracts
- **CD** calendar day contracts and;
- **A + B** or innovative contracts that provide incentive/disincentives to the contractor for early completion.

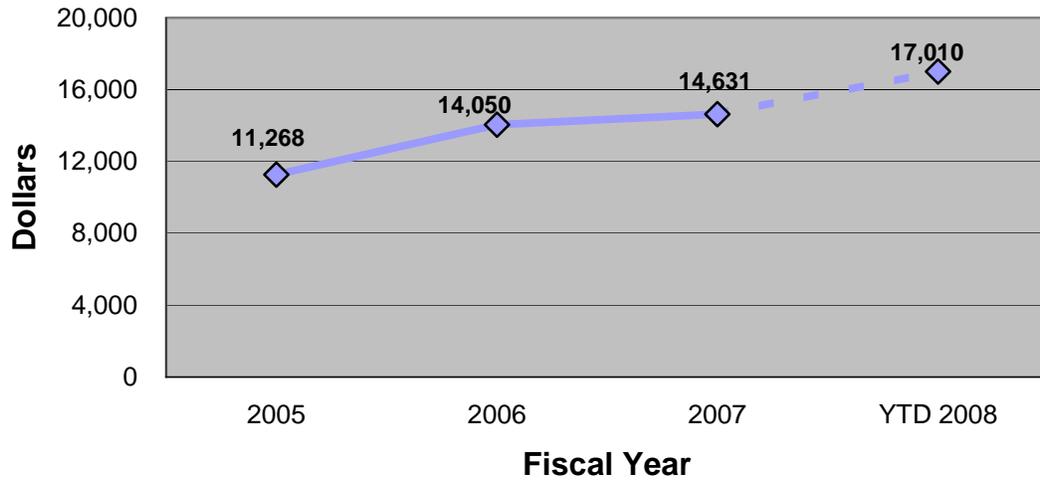
This is an annual measure updated each quarter.

Improvement Status:

The greater use of A+B and calendar-day contracts resulted in a larger amount paid per calendar day in fiscal year 2008. MoDOT’s strategy of utilizing innovative contracting techniques has resulted in faster contract completion and fewer delays to the traveling public. Contract types are reviewed to make a determination of the most effective use of resources for timely completion of projects.



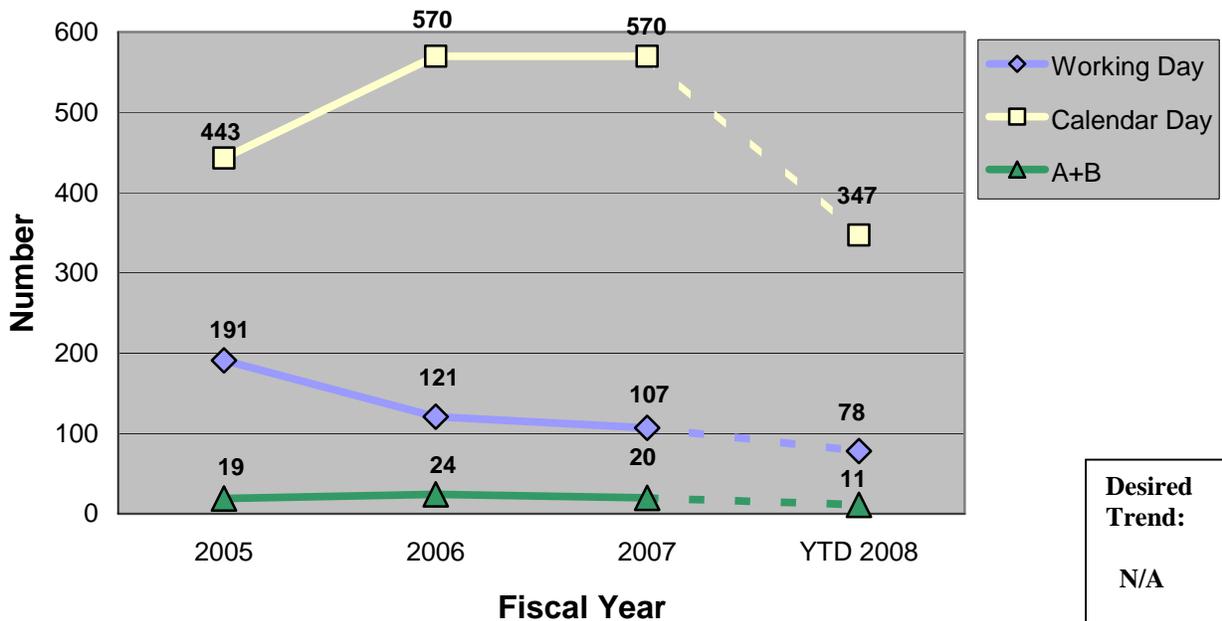
Average Construction Cost Per Day by Contract Type All Contract Types



Desired
Trend:



Average Construction Cost Per Day by Contract Type Number of Active Contracts



Desired
Trend:

N/A

Fast Projects That Are of Great Value

Unit cost of construction expenditures

Result Driver: Dave Nichols, Director of Program Delivery
Measurement Driver: Travis Koestner, Bid & Contract Services Engineer

Purpose of the Measure:

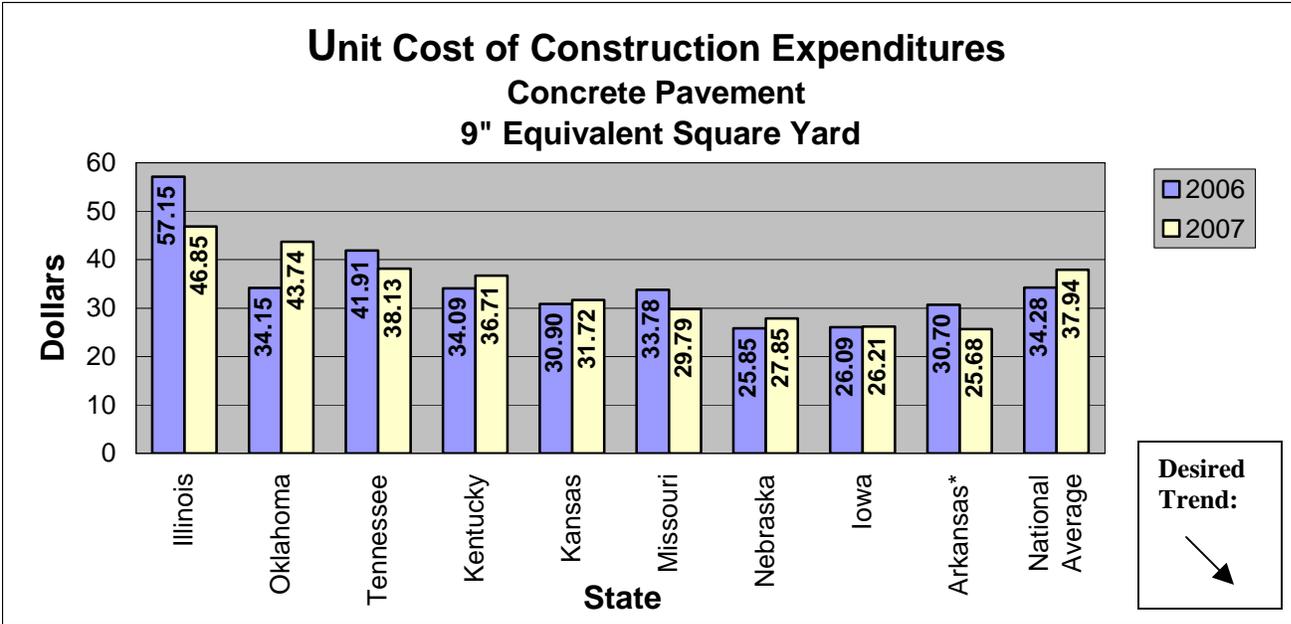
This measure tracks how MoDOT projects provide great value by comparing the cost of major items of work for MoDOT projects to other state DOTs. MoDOT customers should be able to gain an understanding of what it costs for a DOT to install an item of work. While value should not be defined as MoDOT prices per unit being the lowest as compared to other DOTs, prices can be compared keeping in mind that labor rates, material availability and general project conditions such as urban vs. rural will vary from state to state.

Measurement and Data Collection:

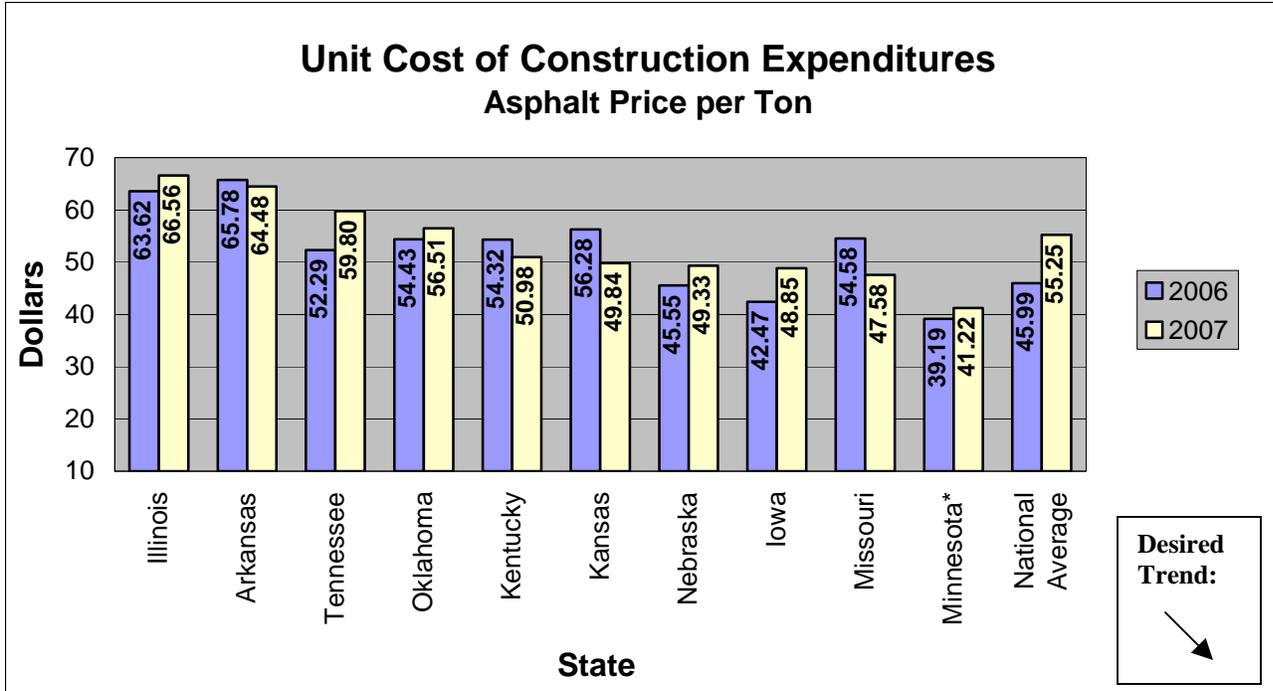
Value in this measure has simply been related back to dollars per unit of measure. MoDOT staff categorizes raw data from an outside vendor for the unit cost from other states. FHWA is the source for determining the “lowest in the country.” Currently FHWA is retooling its method of determining state price indexes. This is a success for DOTs since FHWA’s old method produced numerous pieces of erroneous data. Due to the data discrepancies the lowest in the country was selected from the best of what was available and the overall index of some of the surrounding states is not reported. This is an annual measure updated each January.

Improvement Status:

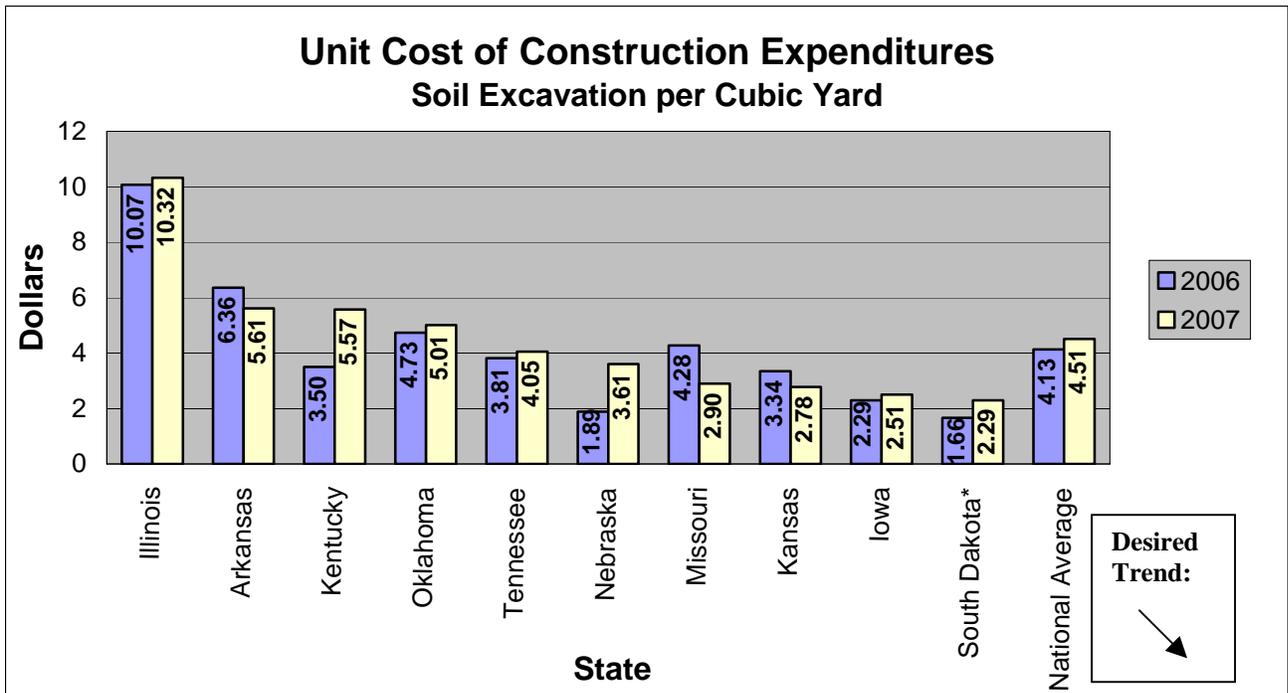
Excellent competition in the past year has enabled MoDOT to realize more than a 10 percent reduction in unit prices for paving and excavation – the largest percentage decrease in those areas among Missouri’s surrounding states. In the past year, MoDOT had an average of more than 4.2 bidders per proposal as compared to fewer than 3.5 bidders per proposal just a couple of years ago. Projects over \$20 million are receiving an average of over six bids per proposal which can be attributed to smaller programs in surrounding states and MoDOT’s efforts to “balance” the bid openings by spreading out the big jobs in different months. Balancing bid openings will continue as well as expansion of the use of alternate technical concepts that give bidders and designers more flexibility to deliver the best value for every dollar spent.



* Lowest in the US in 2007



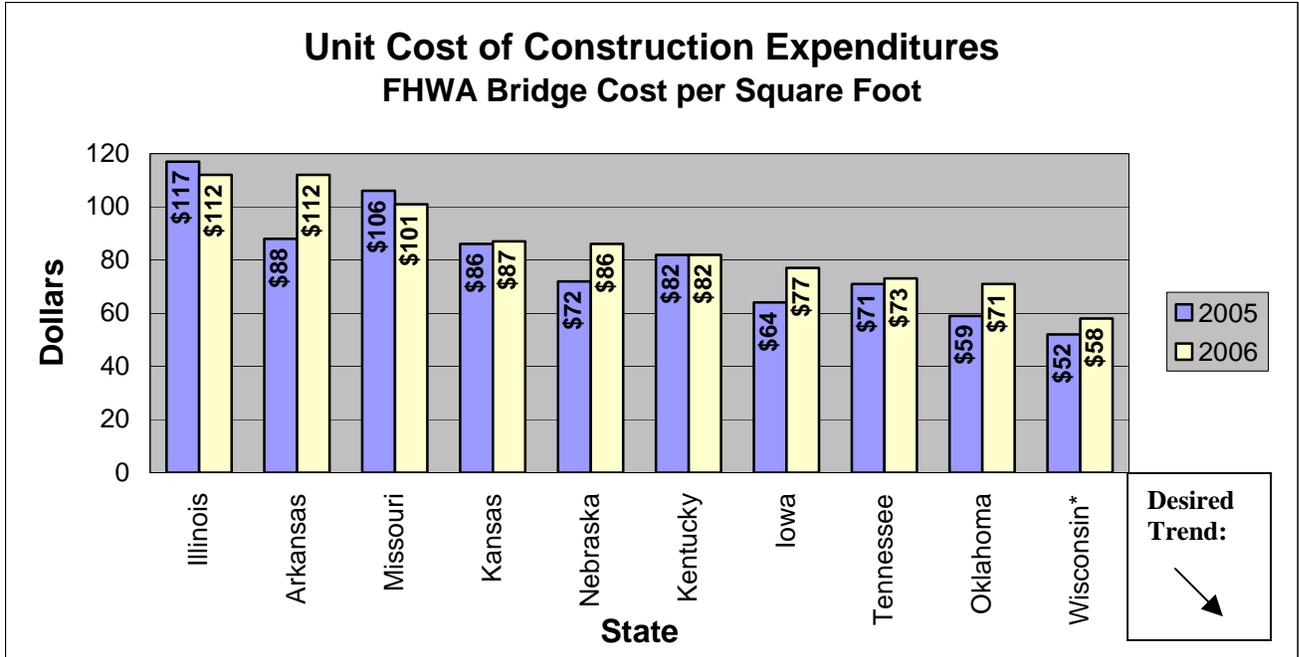
* Lowest in the US



* Lowest in the US

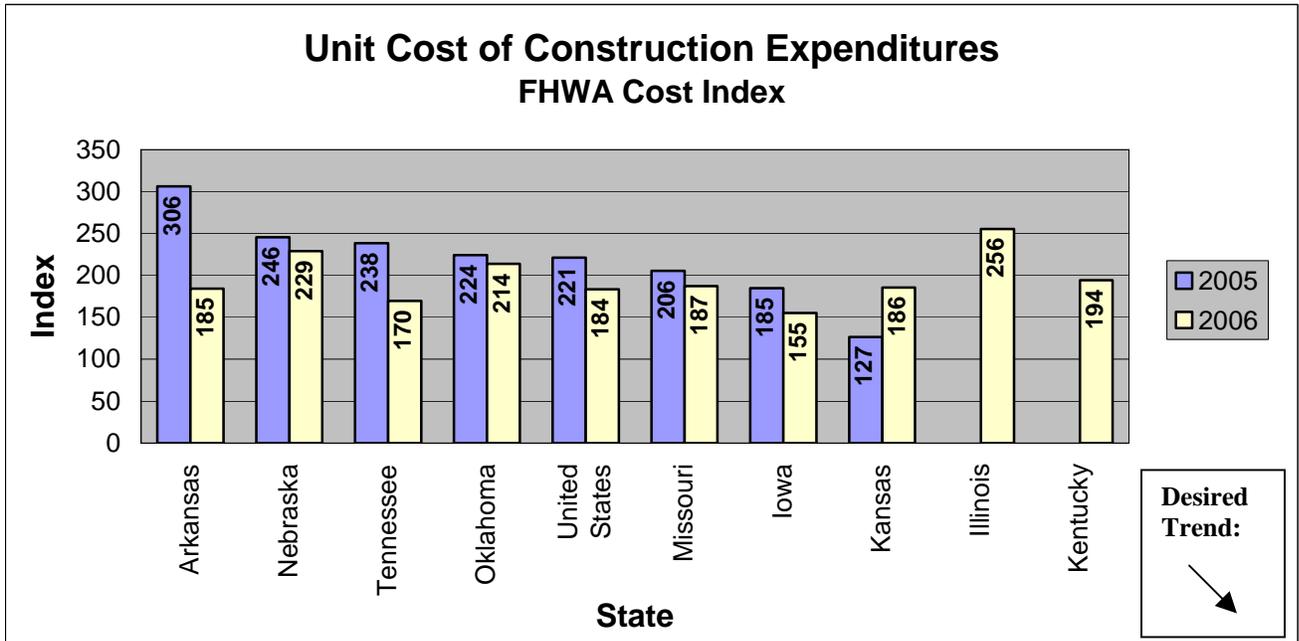
Footnote for the charts above:

Source Data for states other than Missouri from Oman Systems Bid Tabs Professional latest data available as of Jan. 1, 2008. Items include common excavation items paid for by the cubic yard. FHWA Data from FHWA "Price Trends for Federal-Aid Highway Construction" Fourth Quarter 2006. Missouri Data from MoDOT bid history.



*Lowest in US

Source data from FHWA memo "Bridge Construction Unit Cost" dated January, 2008. FHWA does not publish an average U.S. cost per square foot for bridges.



Source: FHWA "Price Trends for Federal-Aid Highway Construction" Fourth Quarter 2006. Illinois and Kentucky did not report, Kansas index posted at 126 seems to have an error in the data. Information is still shown since it is the only information on a per state basis that is available.

Fast Projects That Are of Great Value

Annual dollar amount saved by implementing value engineering

Result Driver: Dave Nichols, Director of Program Delivery

Measurement Driver: Kathy Harvey, State Design Engineer

Purpose of the Measure:

This measure tracks the amount of money MoDOT saves by implementing value engineering proposals.

Measurement and Data Collection:

Value engineering (VE) has saved MoDOT over \$329 million since 1988. VE achieves savings at the design phase and at the construction phase of a project. VE utilizes a team approach to refine the purpose and need and then develop innovative and creative ideas, which result in project savings while optimizing project performance. The VE team is usually independent from the project core team and includes participants from various disciplines both from within and outside of MoDOT. VE studies are done on projects at all stages of development, from the concept stage to final design and during construction.

VE savings are reported annually to the Federal Highway Administration by each state and the national results are available for Federal Fiscal Year 2006. For design phase savings, Florida is the best in the nation showing \$414 million implemented. For construction phase savings, Virginia is the best in the nation showing \$6.71 million implemented. When compared to states surrounding Missouri, Kentucky reported \$61 million saved during design and Arkansas reported \$2.43 million saved during construction. Direct comparison to other states is challenging because of differences in construction program size and project development processes.

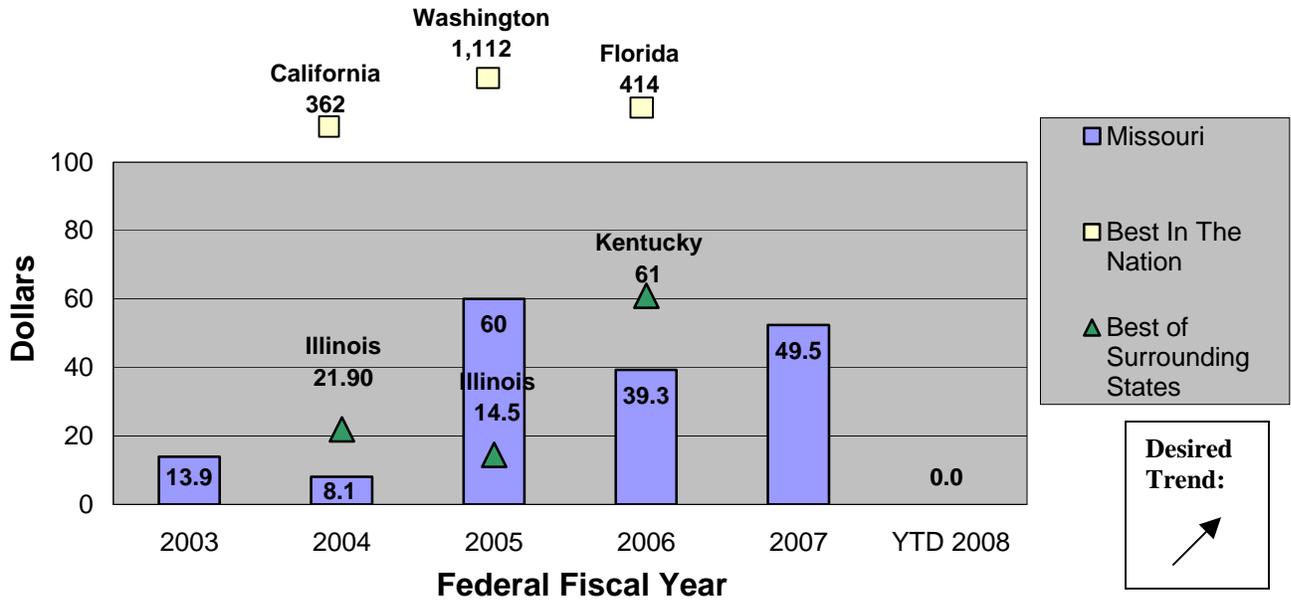
This is an annual measure using a federal fiscal year, running from October 1 to September 30. New updates are reported in the January Tracker edition, however the year-to-date total for the current fiscal year is included in each of the other editions.

Improvement Status:

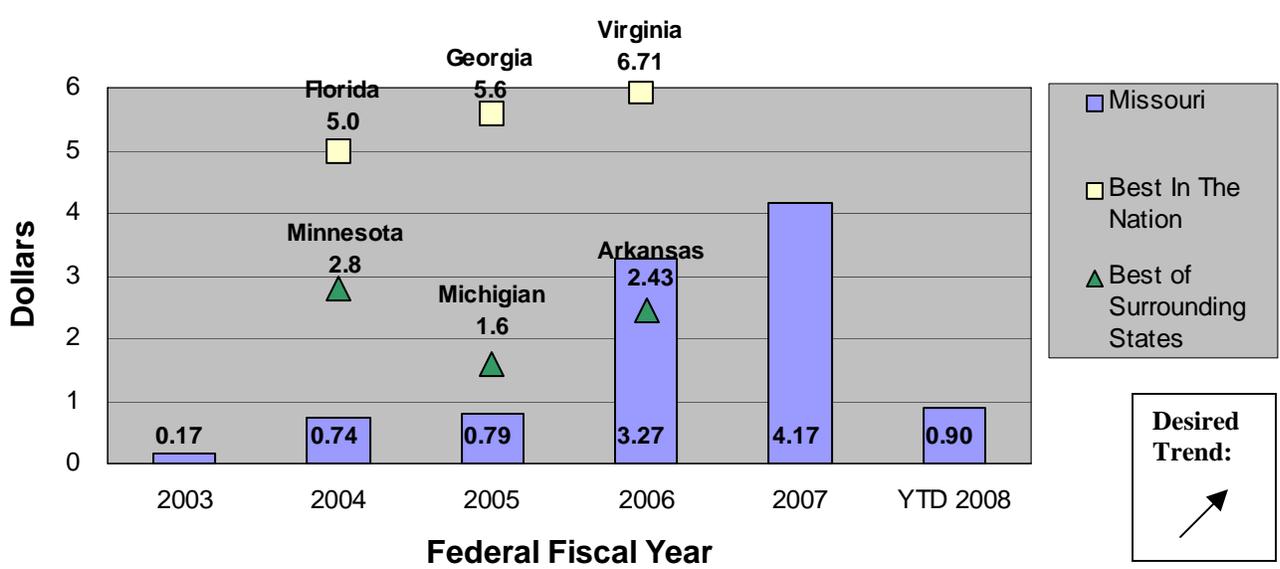
Traditionally, VE studies during the design phase of a project were a five-day formal event that required a tremendous amount of organization and facilitation. As a result, VE studies were only done on the significant few projects where large savings could be realized. In an effort to increase the number of VE studies being done and thus increase the potential for cost savings, the format of the study has been revised to be more flexible. VE studies now match the size and needs of the project, ranging from four hours to five days. Any trained staff can conduct studies, but the documentation goes through the VE administrator. This change has increased the number of VE studies being done during the design phase of the projects. Practical design influenced the 2005 VE program. As expected, 2006 was lower, but there was an increase for 2007.

On the construction side, the implementation of the Performance Plus program has increased the interest in VE studies by contractors and MoDOT staff. In addition, there has been a large effort to educate resident engineers on what VE studies are and their importance. Better reporting associated with the change order process has been encouraged. In 2007, MoDOT construction savings from VE studies were \$4.17 million: 63 out of 84 VE proposals submitted were approved.

Annual Dollar Amount Saved by Implementing Value Engineering Design Phase (in millions)



Annual Dollar Amount Saved by Implementing Value Engineering Construction Phase (in millions)



Fast Projects That Are of Great Value

Percent of customers who feel completed projects are the right transportation solutions

Result Driver: Dave Nichols, Director of Program Delivery

Measurement Driver: Kathy Harvey, State Design 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 is collected through an annual survey that is sent to users of projects that were completed and opened to traffic within the previous year. The goal is for the MoDOT districts to identify 30 projects – three per district – in three different categories (large – major route listed as or funded through major project dollars; medium – district-wide importance; and small – only local significance).

In fiscal year 2007 the Truman School of Public Affairs at the University of Missouri administered the survey of 30 projects, and in fiscal year 2008 Heartland Market Research coordinated the effort for 29 projects. In each case a sample of residents was drawn from zip code areas adjoining the roadway where the project was recently completed. The samples have included 400 addresses per project areas for a total of 12,000 surveys in fiscal year 2007 and 11,600 in fiscal year 2008. Nearly 2,900 surveys were returned in the initial survey and more than 2,300 were returned this year.

In order to facilitate better comparisons of changes from year to year, the statistics used in the project assessment usually do not include “not sure” percentages. This eliminates a major source of random variability and allows a more accurate observation of change over time. In addition, this methodology is consistent with how MoDOT calculates similar Tracker measures. The fiscal year 2007 data has been recalculated with this methodology to enable readers to see changes from one year to another.

This measure is reported annually. Districts will continue to identify one project in each of the three categories to be surveyed, although it is recognized that it might not be possible for every district to have three projects that meet the criteria each year.

Improvement Status:

Project-specific questions were asked of MoDOT customers and each showed a high level of satisfaction with important goals such as safety, convenience, less congestion, handles traffic efficiently, easy to navigate, easy to understand, and well marked.

The results show that most Missourians are very satisfied with both the local project and with MoDOT's overall efforts. The majority of respondents thought that the project made the roadway safer (94.6 percent), more convenient (90.8 percent), less congested (81.1 percent), easier to drive (92.9 percent), better marked (89.9 percent) and was the right transportation solution (93.9 percent).

On a more general measure, 84 percent of the respondents stated that they were satisfied with MoDOT's efforts to provide a quality transportation system in Missouri. The survey also asks “What is the greatest transportation problem facing your community?” Over the last two years, Missourians have been very consistent about their top three transportation priorities. In both years, approximately 80 percent of respondents listed the poor conditions of roads and bridges, narrow roads, or congestion as the greatest transportation problems facing their community.

