

MISSOURI DEPARTMENT OF TRANSPORTATION

# FOCUS

STRATEGIC INITIATIVES FOR CONTINUOUS IMPROVEMENT

*October 2018*

SAFETY • SERVICE • STABILITY



## Director's Message

On behalf of myself and members of the Senior Management Team, I would like to extend the gratitude and appreciation due to all who have contributed to this quarter's FOCUS activities and related projects. We appreciate the thoughtfulness, eagerness and honesty you lent to the process. As mentioned before, special care was taken in putting a team together that represents the cross sections of the department and following a model that was truly top down and bottom up in its approach to meeting the goals of this project. We especially appreciate you shifting your daily work and priorities to volunteer for this project and accommodating the tight deadlines that are regular features of a public facing role in state government.

Your presence was highly valued on this specific team, but also on Team MoDOT. Be proud that your fellow co-workers look to you as a project manager. It is easy to think that our contribution to the department is sometimes overlooked or lost in a bigger picture. However, the ongoing success of these projects demonstrates that MoDOT employees continue to do their best to improve the condition of our infrastructure and our organization.

Your commitment to doing your best makes you stand out, and other employees are watching you and influenced by how you "show up" in the workplace. Our management team knows the department will continue to be successful because of employees like you.

Again, please accept my sincere appreciation for all that you do.

Sincerely,

A handwritten signature in black ink, appearing to read "Patrick G. McKenna". The signature is fluid and cursive, with a long horizontal stroke at the end.



# MISSOURI

## Department of Transportation

2018 Version 1.0



### ASPIRATION

**We will provide a world-class transportation system that is safe, innovative, reliable, and dedicated to a prosperous Missouri**

### THEMES

#### Safety

Keep citizens and employees safe

#### Service

Deliver transportation solutions of great value and use resources wisely

#### Stability

Preserve and operate a reliable transportation system with an engaged workforce

### INITIATIVES

- Improve safety culture
  - Buckle Up Phone Down, Behavior Based Safety
  - District training academy pilot
  - Development of statewide safety standard operating procedures
- Innovate to improve work zone and system-wide safety
  - Autonomous truck-mounted attenuators and flagger vehicles
  - Deploy a suite of demonstrably impactful safety techniques through a design-build program structure
- Improve partnerships with other agencies and leverage private sector
  - Predictive analytics to optimize development of enforcement and winter operations resources

- Improve communications
  - Citizen's Guide to Transportation Funding
  - New department website
  - Better traveler information map
- Improve project management tools
  - Maintenance Management Information System
- Develop innovative program delivery
  - Design-build, design-build finance, and/or operations and maintenance options
  - Value engineering
- Fleet and facilities optimization strategy implementation

- Increase employee engagement and recognition
  - Pay plan
  - Training and certifications
  - Evaluate job descriptions
  - Leadership coins
  - Succession planning
- Research and deploy alternative funding solutions
  - Cross-cabinet collaboration
- Leverage innovations to reduce costs and improve service quality
- Cost share program with local government statewide

RANKINGS	
1-10	= A
11-20	= B
21-30	= C
31-40	= D
41-50	= F



**Road Conditions**

**Current Performance** = 90 percent major highways (5,517 miles) in good condition. 76 percent of minor highways (28,339) in good condition.  
**National Ranking** = Missouri had the 9th best pavements on the National Highway System. (FHWA Highway Statistics)



**Customer Satisfaction**

**Current Performance** = 83 percent satisfied customers  
**National Ranking** = Missouri trails the highest rated company on the American Customer Satisfaction Index by only 4 percent.



**Project Management**

**Current Performance** = Missouri road and bridge projects were delivered within 0.8 percent of the award amount and 93 percent were delivered on-time.  
**National Ranking** = Not available.



**Congestion (travel time index)**

**Current Performance** = Kansas City - 1.13 St. Louis - 1.15  
**National Ranking** = Kansas City (9th) and St. Louis (10th) rank as some of the least congested urban areas in the U.S. (Texas Transportation Institute)



**Administrative Costs**

**Current Performance** = \$2,187 cost per mile  
**National Ranking** = Missouri has the 3rd lowest administrative cost per mile. (FHWA Highway Statistics)



**Infrastructure for Business**

**Current Performance** = No internal measure  
**National Ranking** = A CNBC business study ranks Missouri's infrastructure as the 11th best for business.



**Number of Fatalities**

**Current Performance** = 932 fatalities  
**National Ranking** = Only 12 states experienced more motor vehicle deaths ranking Missouri 38th. (National Safety Council)



**Bridge Conditions**

**Current Performance** = 8 percent of bridge decks in poor condition (24,487 total bridges)  
**National Ranking** = Missouri ranked 38th for the most bridge deck area in poor condition. (FHWA Highway Statistics)



**Revenue**

**Current Performance** = \$50,766 revenue per mile  
**National Ranking** = Missouri has the 46th lowest revenue per mile. (FHWA Highway Statistics)



**Employee Turnover**

**Current Performance** = 11.99 percent  
**National Ranking** = Not available; However, **Stretch Target** = 6 percent. (Price Waterhouse Cooper's Saratoga Institute benchmark data)

# MODOT VALUES

## TANGIBLE RESULTS

### SAFETY

Be Safe

Keep Customers and Ourselves Safe

Be Accountable

### SERVICE

Be Respectful

Be Inclusive

Provide Outstanding Customer Service

Deliver Transportation Solutions of Great Value

Use Resources Wisely

Be Bold

Be Better

### STABILITY

Be One Team

So we can be a great organization

Keep Roads and Bridges in Good Condition

Operate a Reliable and Convenient Transportation System

Advance Economic Development

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# SAFETY

## *Keep citizens and employees safe*

- **Improve Safety Culture**
  - Buckle Up Phone Down
  - Behavior Based Safety
  - District Training Academy Pilot
  - Development of Statewide Safety Standard Operating Procedures
- **Use Innovation to Improve Work Zone and System-wide Safety**
  - Autonomous Truck-mounted Attenuators and Flagger Vehicles
  - Deploy a Suite of Demonstrably Impactful Safety Techniques through a Design-build Program Structure
- **Improve Partnerships with Other Agencies and Leverage Private Sector**

# Improve Safety Culture

## Buckle Up Phone Down

### SAFETY CHAMPION

Mark Shelton, District Engineer

### PROJECT MANAGER:

Nicole Hood, Highway Safety and Traffic Engineer

### PURPOSE OF THE PROJECT:

MoDOT is improving the safety culture through Statewide Strategic Initiatives such as Buckle Up Phone Down. In 2017, MoDOT introduced the Buckle Up Phone Down challenge to address the two most impactful actions a driver can take to prevent crashes or survive if one occurs.

The Buckle Up Phone Down challenge is an attempt to drive down the record number of fatalities and serious injuries on our roadways. The challenge encourages businesses and individuals to pledge to buckle up every person, every trip and for drivers to put their phone down. Distracted driving is a leading cause of traffic crashes, with texting and driving increasing the risk of a crash by 50 percent. In a 2018 survey conducted by AT&T, nearly nine out of ten drivers admitted to using a smart phone while driving. In addition, over 60 percent of traffic fatalities in Missouri involve unbuckled drivers or passengers who may have survived if they were properly restrained. Several hundred Missouri businesses have pledged to promote this challenge with their employees and thousands of individuals have also made the pledge to promote their own safety and that of others.

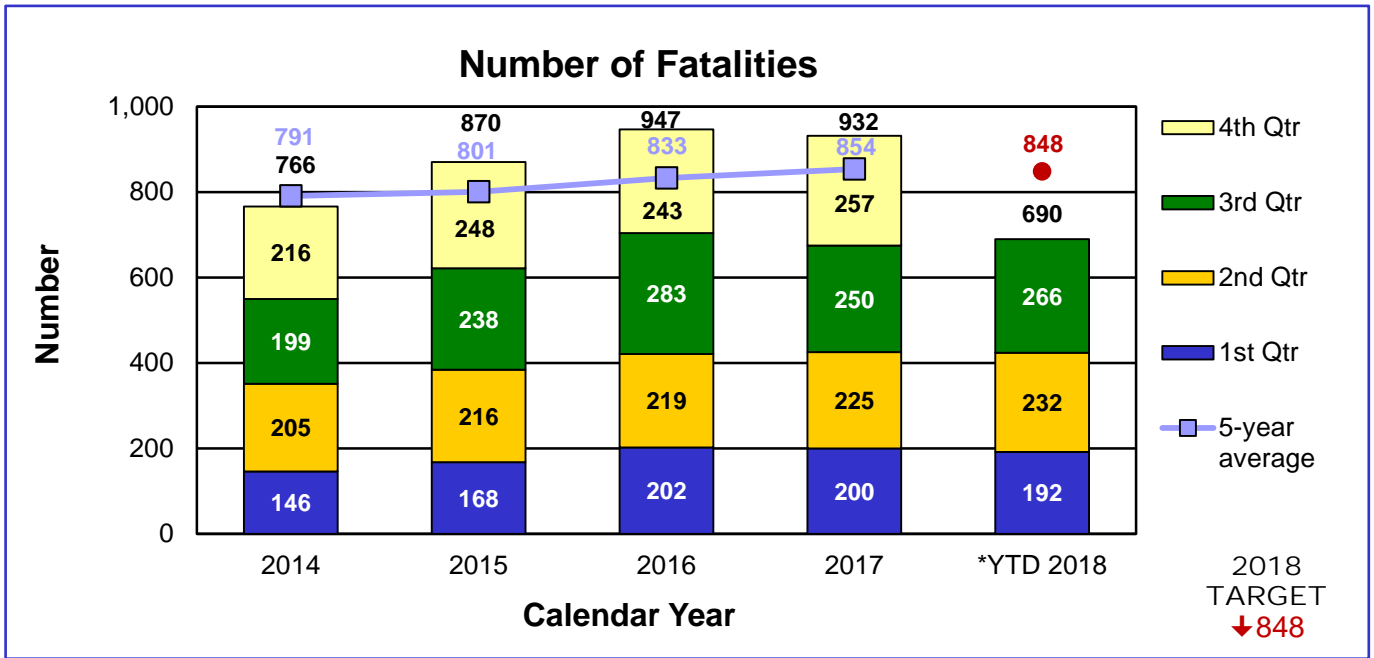
Not only are we getting individuals to accept the challenge, we're getting businesses to support safety policies such as banning cellphone use in company vehicles and making safety belts mandatory. The Buckle Up Phone Down challenge includes a website featuring citizens and employees of participating businesses giving the "thumbs up/thumbs down" sign to show their support of the effort.

October 19, 2018, was MoDOT's second annual Buckle Up Phone Down Day, a time to stand up, accept the challenge and promote roadway safety. The day was a success; Governor Mike Parson proclaimed Oct. 19<sup>th</sup> as BUPD Day in Missouri, an additional 500 people signed up to take the challenge, social media was saturated with the BUPD message and various activities occurred across the state.

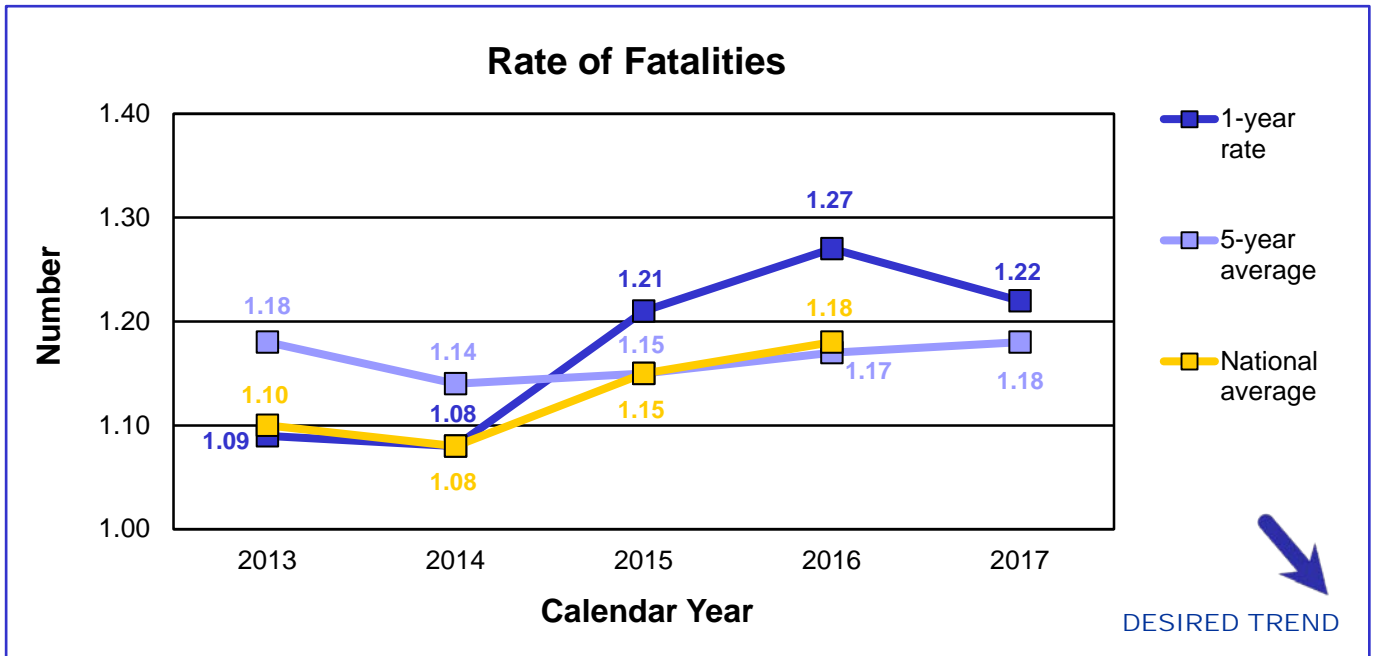
The recent outcome from Missouri's safety belt survey indicates the challenge is helping to educate and encourage more people to buckle up. The 2018 statewide safety belt use rate was 87.1 percent, which is a 3.1 percent increase over the 2017 survey results.



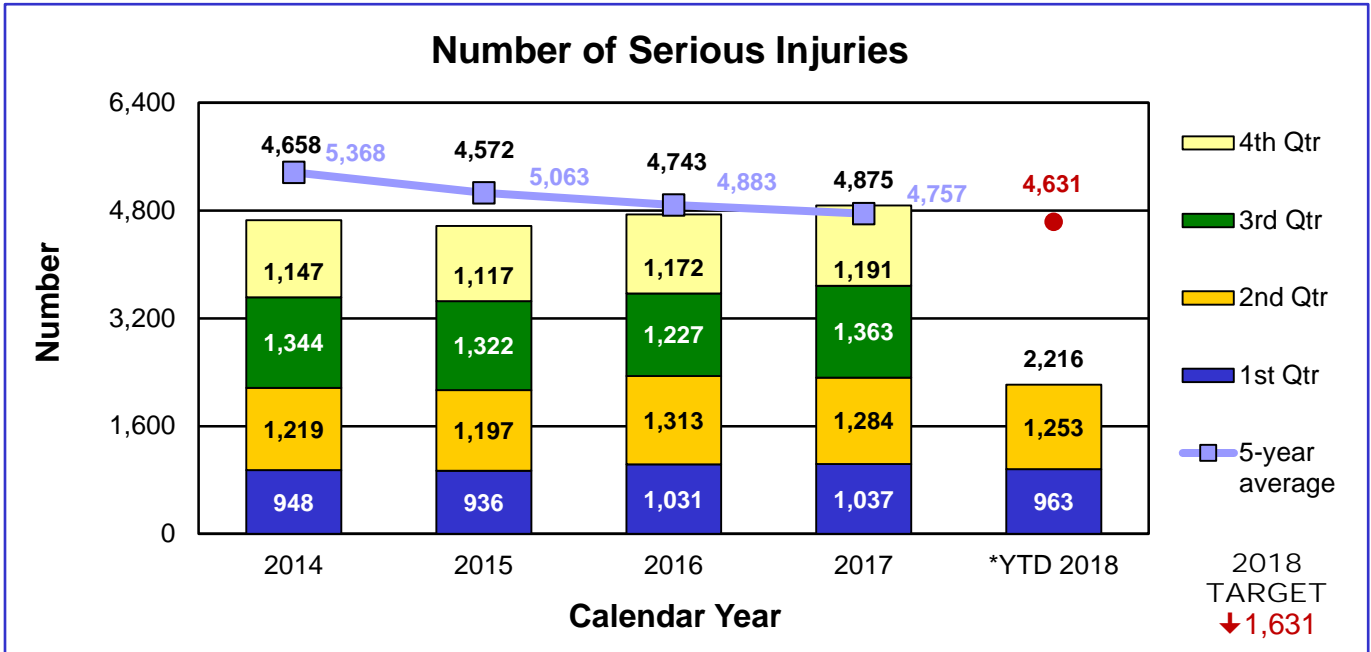
# Improve Safety Culture



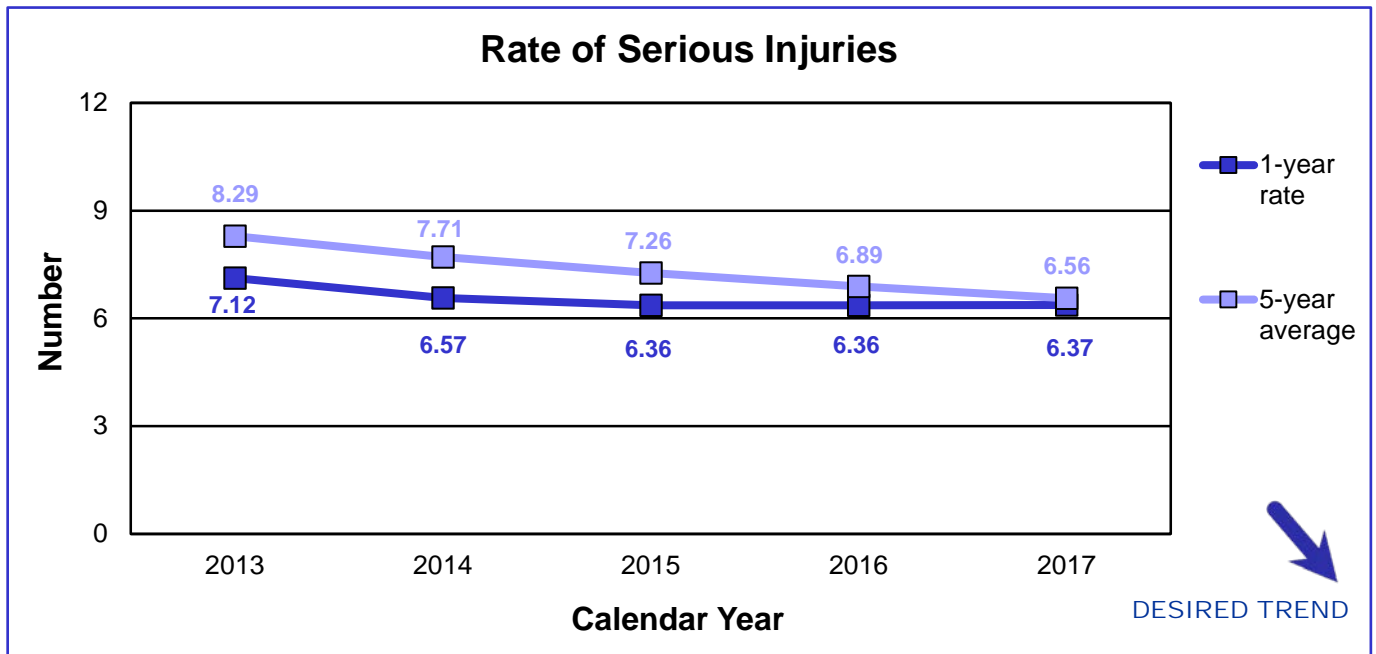
\*YTD 2018 – Due to the backlog of data, first and second quarter fatalities were derived from TMS and third quarter fatalities are from MSHP radio reports.



# Improve Safety Culture



\*YTD 2018 – Due to a backlog of crash reports into STARS, the serious injury measure only includes data derived from TMS. Third quarter 2018 data is not available on the MSHP radio reports and is incomplete in TMS.



# Improve Safety Culture

## Behavior Based Safety

### SAFETY CHAMPION:

Mark Shelton, District Engineer

### PROJECT MANAGER:

Jeff Padgett, Risk and Benefits Management Director

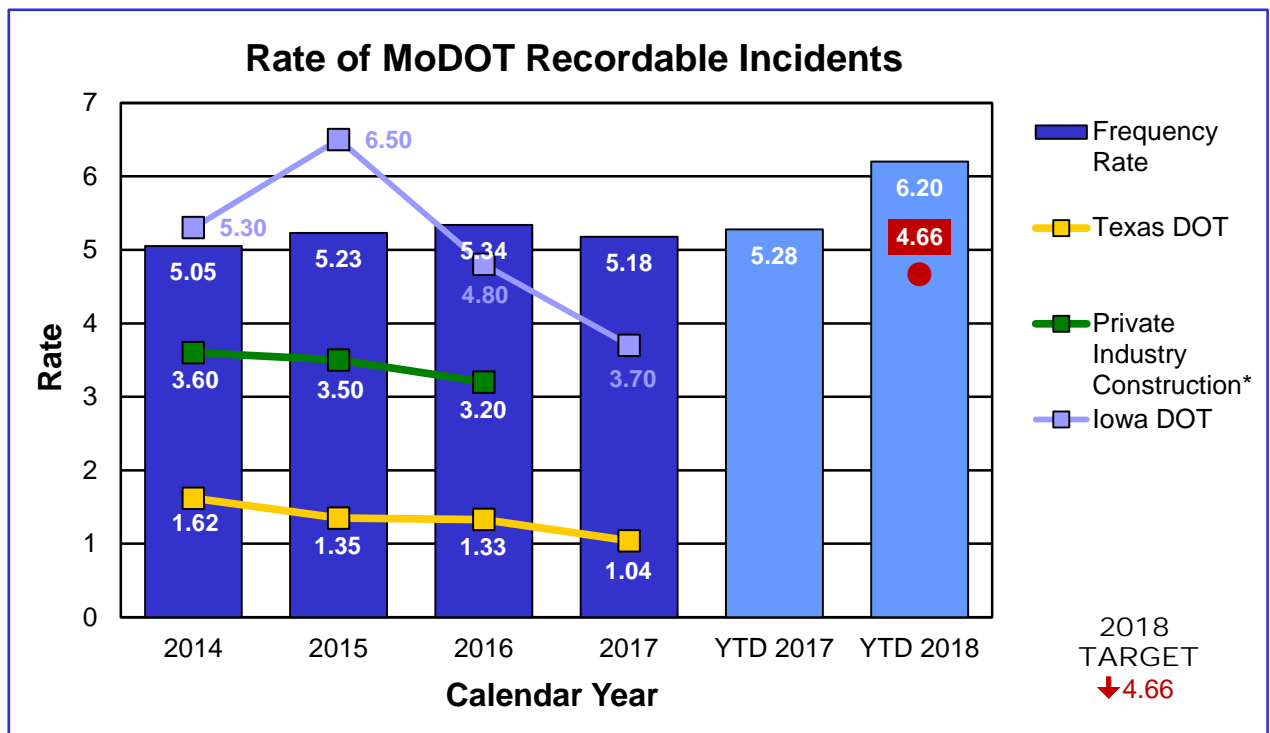
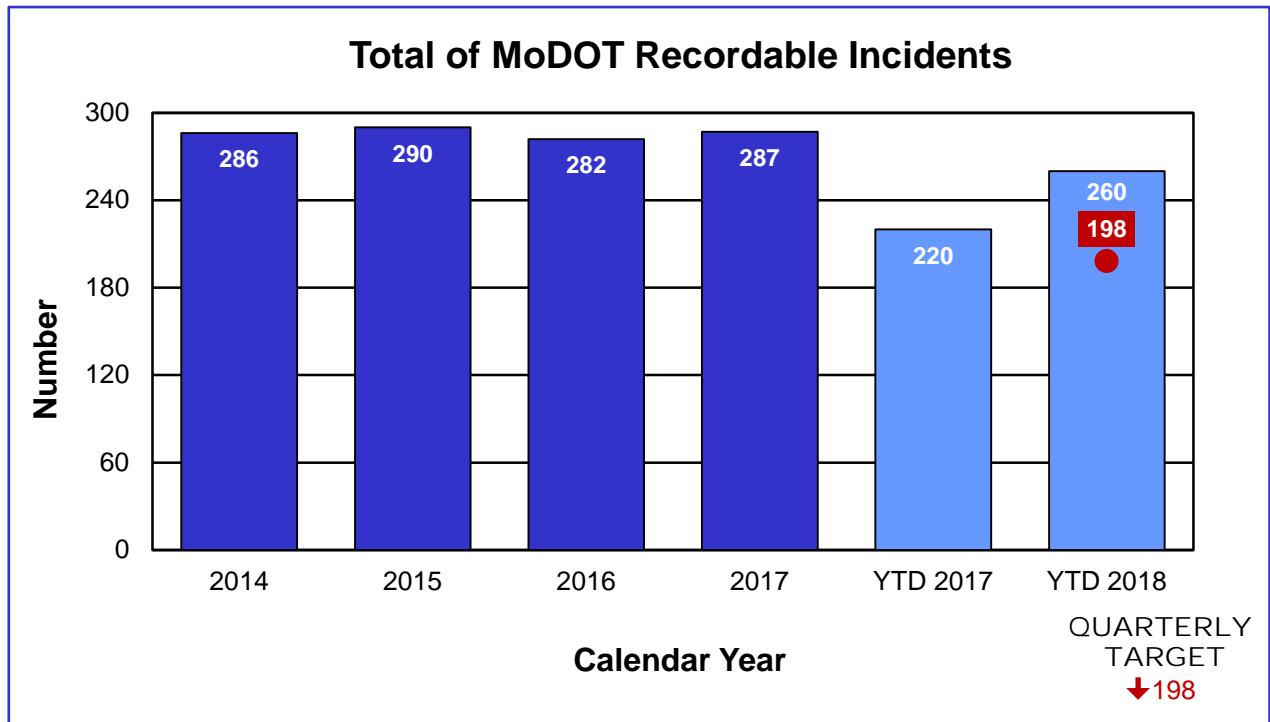
### PURPOSE OF THE PROJECT:

The total and rate of recordable incidents are tracked to measure the department's performance in improving safety. Behavior Based Safety is a strategic initiative that has been implemented over the last two years to improve MoDOT's safety culture. BBS is a concept that emphasizes employees' actively caring about the safety of themselves and their co-workers. BBS training also involves instruction regarding the ability to understand human behavior. The objective of BBS is to eliminate or, at least reduce, the number of recordable incidents and injuries attributable to employees' actions.

MoDOT recordable incidents have plateaued over the past several years. Incentive programs have been unsuccessful in reducing the number. Incidents result in cost to MoDOT via treatment of injuries and/or payment of Workers' Compensation benefits; typically \$5-6 million annually.

The desired outcome is to reduce incidents and injuries to MoDOT employees. Efforts are underway to reiterate MoDOT's commitment to BBS and to determine strategies to improve performance. This may include supplemental training to supervisory staff or other approaches.

# Improve Safety Culture



\*OSHA private industry data is not yet available for 2017.

# Improve Safety Culture

## District Training Academy Pilot

### SAFETY CHAMPION:

Mark Shelton, District Engineer

### PROJECT MANAGER:

James Shannon, Assistant District Maintenance Engineer

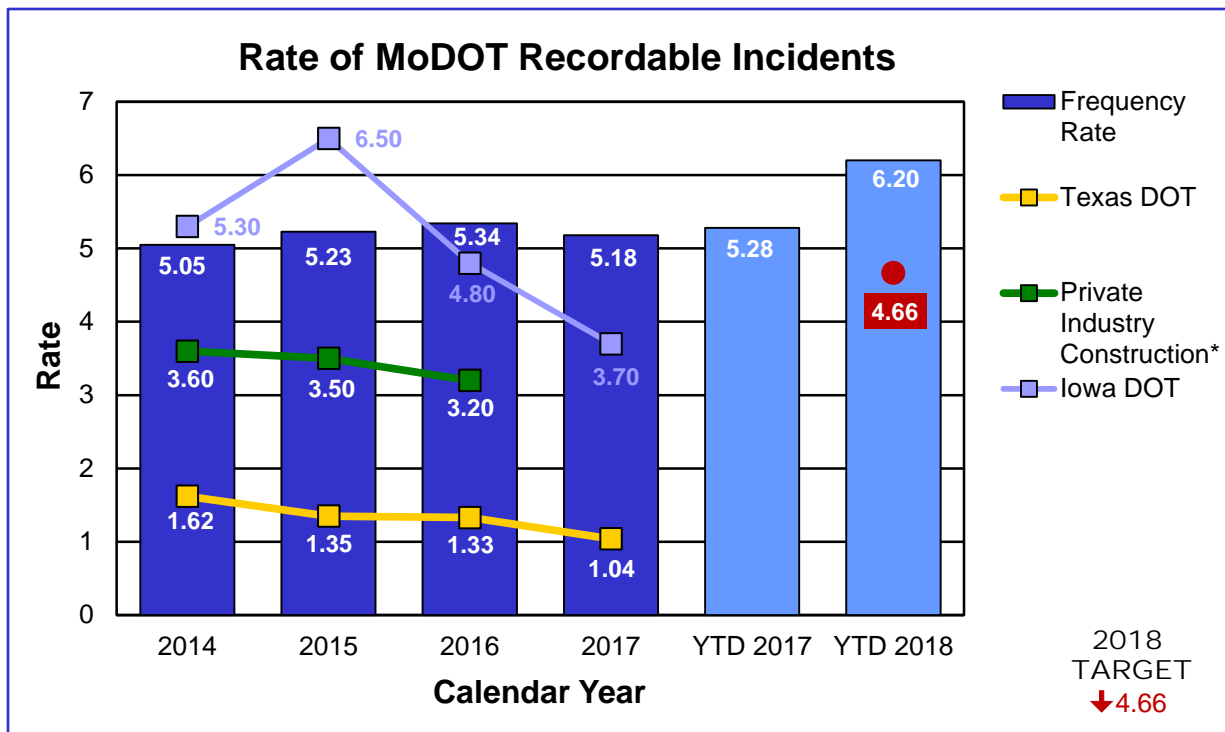
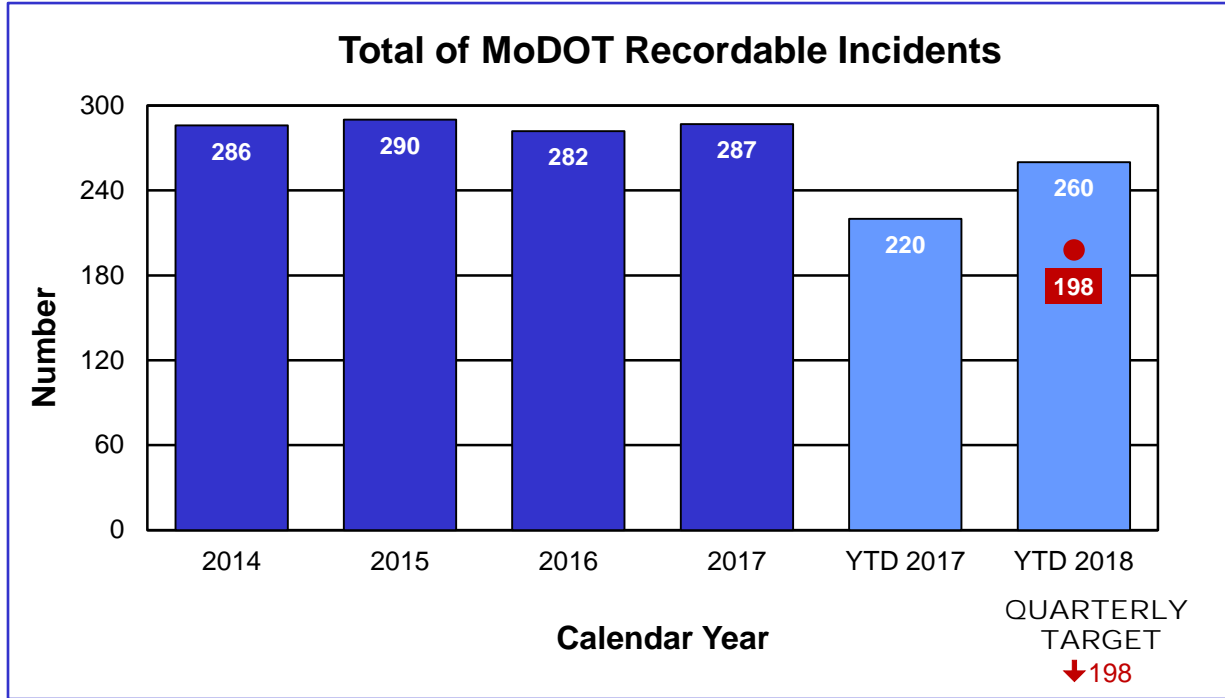
### PURPOSE OF THE PROJECT:

The total and rate of recordable incidents are tracked to measure the department's performance in improving safety. The Maintenance Training Academy is an approach to getting new employees to the point they are working safely and productively inside the department's many shops and facilities. MoDOT workers are exposed to hazards such as high-speed traffic, use of heavy equipment, tools, machinery and driving large vehicles.

Excellent training is a cornerstone of a successful safety culture. Innovative initiatives such as Kansas City's Training Academy will give employees the skills needed to progress in this measure. The marked success of this program is a welcome addition to the department's safety culture. There has been an evident increase in both total and rate of recordable incidents. This is an anticipated result of employee acceptance of BBS and the maturing of safety culture. MoDOT is committed to improving this measure and recognizes that it takes time to move culture.

The District Training Academy provides consistent training by experienced instructors so employees are able to enter into their work group prepared to work safely and aware of the hazards. The academy provides valuable information to supervisors as they can quickly move forward knowing exactly where the new employees stand in their ability to carry out certain tasks safely. In pursuit of MoDOT's mission and values, the District Training Academy will deliver successful outcomes so all employees go home safe.

# Improve Safety Culture



\*OSHA private industry data is not yet available for 2017.

# Improve Safety Culture

## Development of Statewide Safety Standard Operating Procedures

### SAFETY CHAMPION:

Mark Shelton, District Engineer

### PROJECT MANAGER:

Chris Rutledge, Assistant District Engineer

### PURPOSE OF THE PROJECT:

The total and rate of recordable incidents are tracked to measure the department's performance in improving safety. MoDOT spends approximately \$6 million each year for workplace injuries and workers' compensation costs.

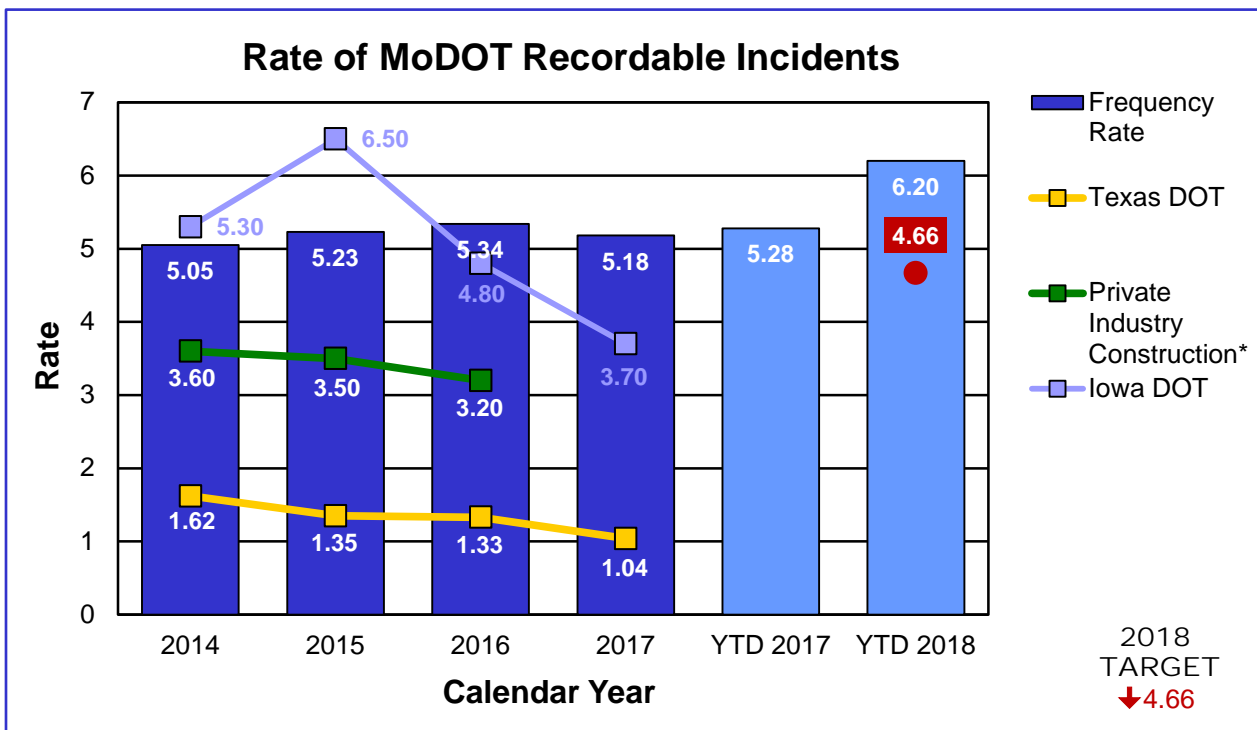
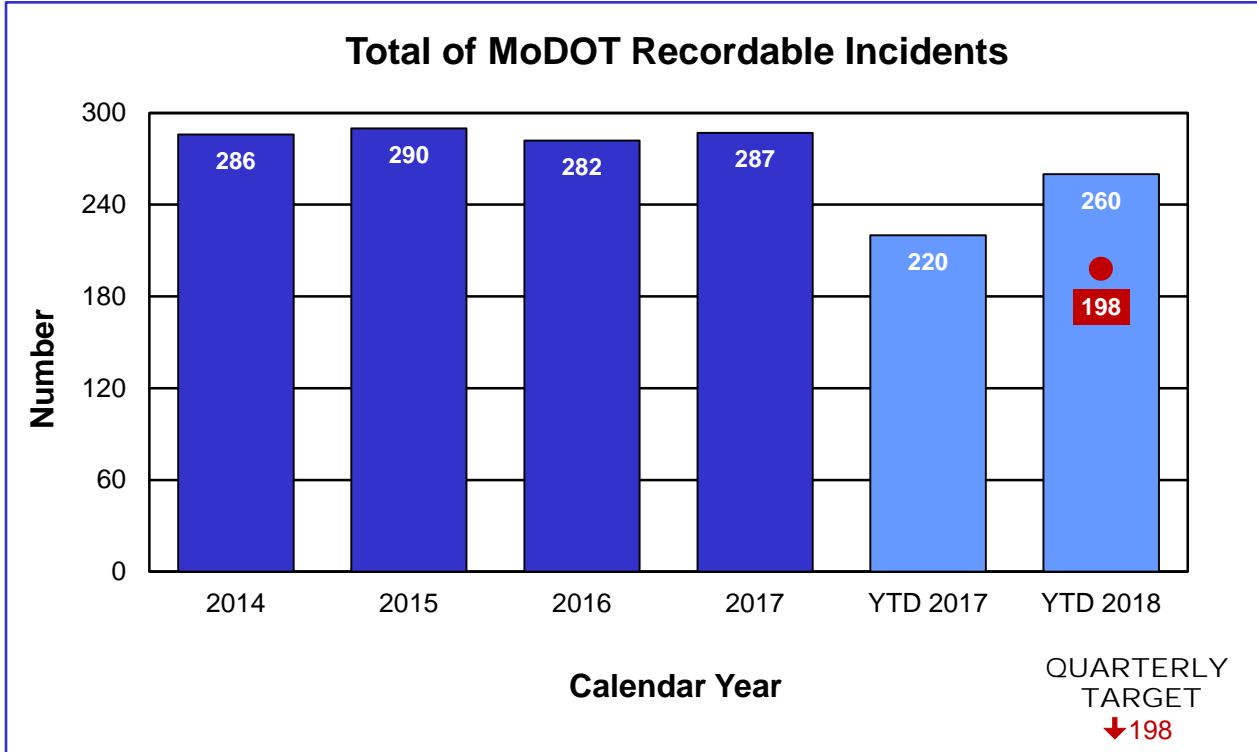
The development of Statewide Safety Standard Operating Procedures will result in the clarification and union of MoDOT's current safety practices and processes with the department's strategic vision and mission. Focus will be primarily in the updating of Safety Policies and Procedures and Risk-Based Assessments as well as incorporating Behavior Based Safety in the revisions.

MoDOT's evolution with BBS has emphasized the need to assure consistency in applying those concepts in its planning and carrying out of departmental field operations. This potentially affects at least 43 risk-based assessments and 76 safety policies.

To support this effort, two comprehensive actions will be taken. First, evaluation and modification of departmental risk-based assessments will be made for safe planning and preparation of field operations. Second, a structured review and revisions will be made of the department's safety policies and procedures to ensure clarity and consistency in the context of MoDOT's BBS culture.

The desired outcome for this initiative is a safer work environment that reduces incidents, injuries, fatalities and customer claims involving MoDOT activity.

# Improve Safety Culture



\*OSHA private industry data is not yet available for 2017.



# Use Innovation to Improve Work Zone and System-wide Safety

## Autonomous Truck-mounted Attenuators and Flagger Vehicles

### SAFETY CHAMPION:

Mark Shelton, District Engineer

### PROJECT MANAGERS:

Chris Redline, District Engineer

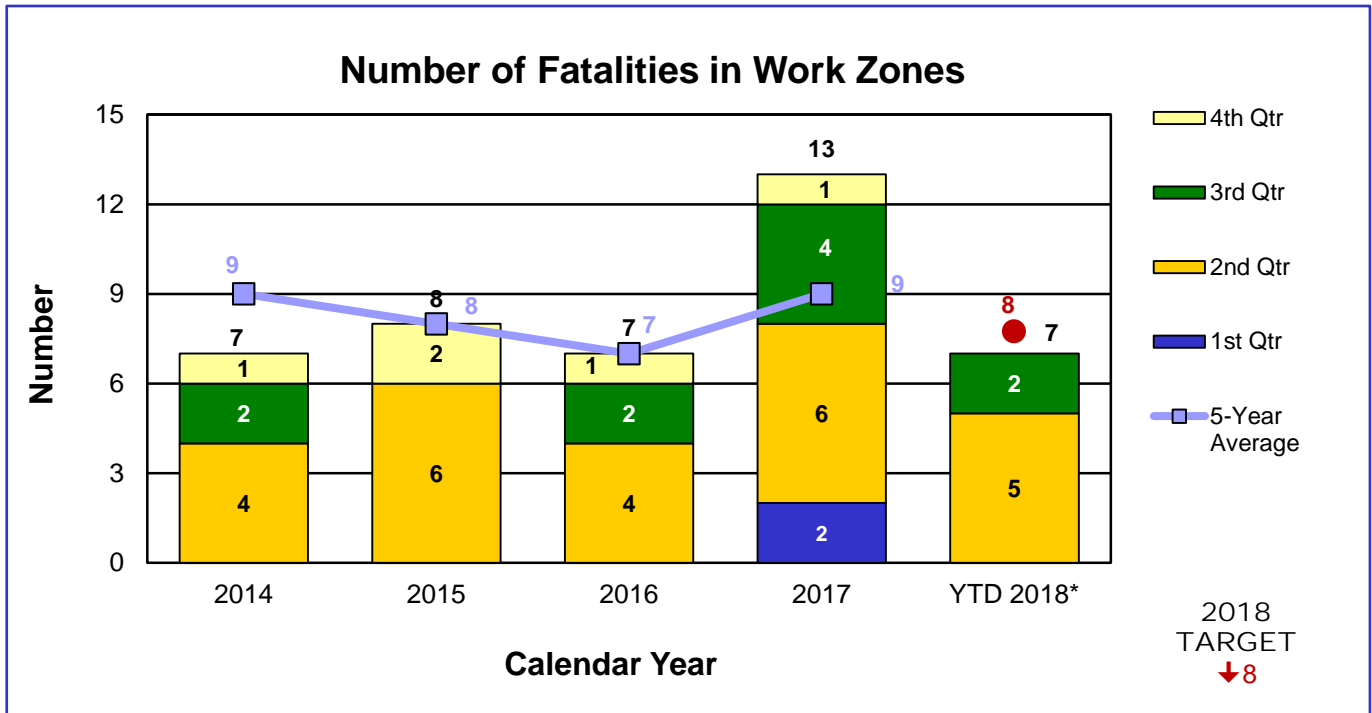
### PURPOSE OF THE PROJECT:

MoDOT's commitment to safety applies to members of its work crew as well as the general public. In 2017, 13 people were killed in work zone crashes on state system routes and an additional three on the local system. MoDOT's ultimate goal is zero fatalities in work zones. Additionally, MoDOT TMA's have been involved in over 100 incidents since 2015 injuring many MoDOT employees. There must be constant improvement in both the planning and technology we employ in the field. MoDOT will implement a two prong approach to improve work zone safety.

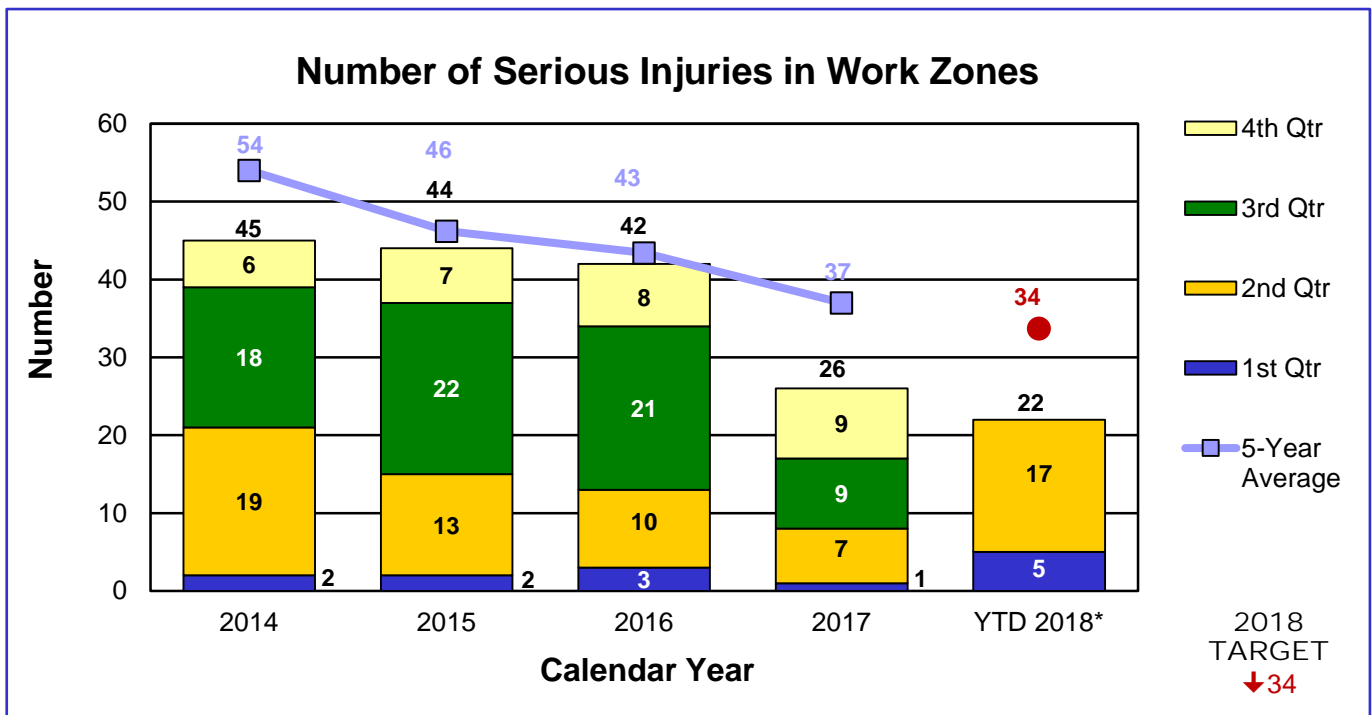
The first approach is to implement an employee innovation that combines a TMA and an Automated Flagging Assistance Device. This will allow flagging operations to be performed using the protection of a TMA. The purpose of this innovation is to keep MoDOT and contractor flaggers alive and uninjured while performing flagging for traffic control. It is MoDOT's intent to procure 22 pair of TMA Flaggers.

The second approach is to develop and implement a Driverless TMA to eliminate injuries to MoDOT employees that drive the first TMA truck motorist's encounter. This is the truck most impacted by motorists. This type of traffic control is used for moving operations such as sweeping and striping. We will eliminate injuries by having an unstaffed TMA truck autonomously follow a lead truck at specified distances. MoDOT plans to pilot a leader-follower TMA system in 2019 that would allow elimination of a MoDOT driver from the rear TMA follow truck.

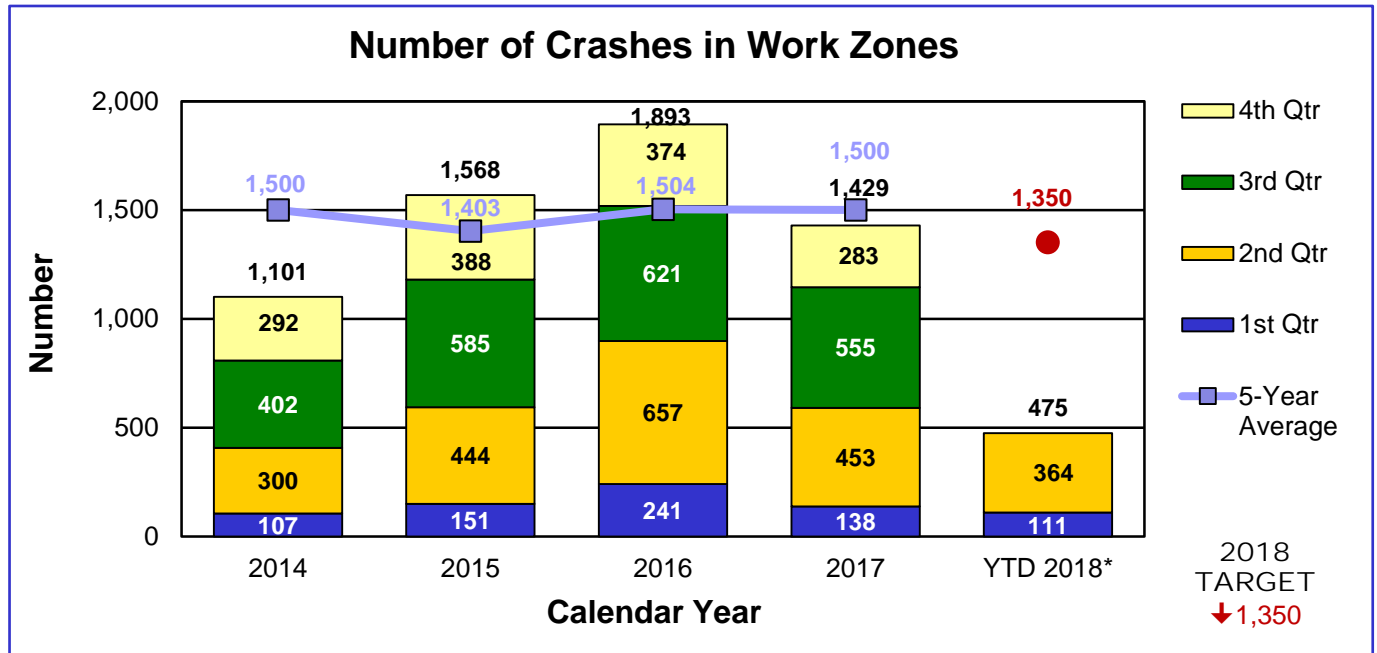
# Use Innovation to Improve Work Zone and System-wide Safety



\*YTD 2018 – Fatalities derived from TMS.



# Use Innovation to Improve Work Zone and System-wide Safety



\*YTD 2018 – Due to a backlog of crash reports into STARS, serious injury and crash measures are not final and only illustrate data derived from TMS. Third quarter 2018 data is unavailable through the MSHP radio reports and is incomplete in TMS.

# Use Innovation to Improve Work Zone and System-wide Safety

## Deploy a Suite of Demonstrable Impactful Safety Techniques through Design-build Program Structure

### SAFETY CHAMPION:

Mark Shelton, District Engineer

### PROJECT MANAGER:

Bill Schnell, Assistant District Engineer

### PURPOSE OF THE PROJECT:

While many eligible safety improvements have an influence on reducing fatal and serious injury crashes, using a data-driven approach will allow the department to maximize the benefit of each dollar invested. Nationally, accepted analysis found in the Highway Safety Manual can be utilized to determine the most cost-effective measures for each section of highway.

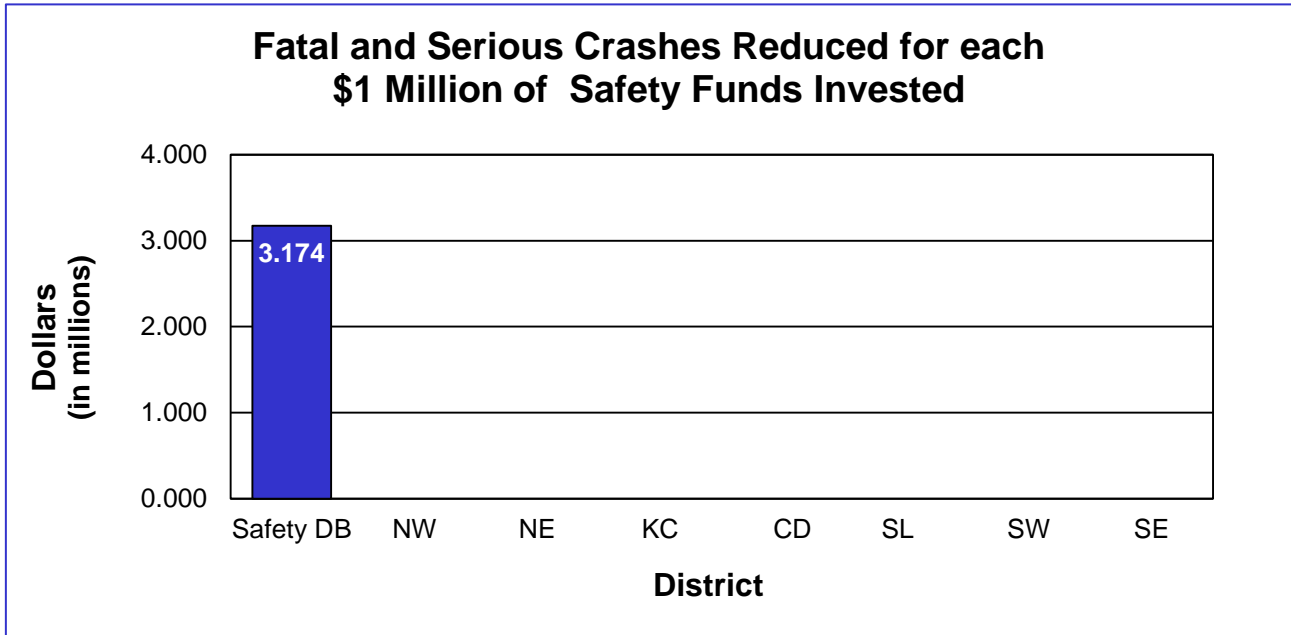
Traditional crash and roadway analysis methods mostly rely on subjective or limited quantitative measures of safety performance. This makes it difficult to calculate safety impacts alongside other criteria when planning projects. Data-driven safety analysis employs a newer approach to identify high-risk roadway features and execute the most beneficial projects with limited resources to achieve fewer fatal and serious injury crashes.

The data not only helps make better decisions during the project development phase, but also helps inform the public as to what safety benefits they can expect from their investment. DDSA improvements may be implemented on a project level basis or on a program level.

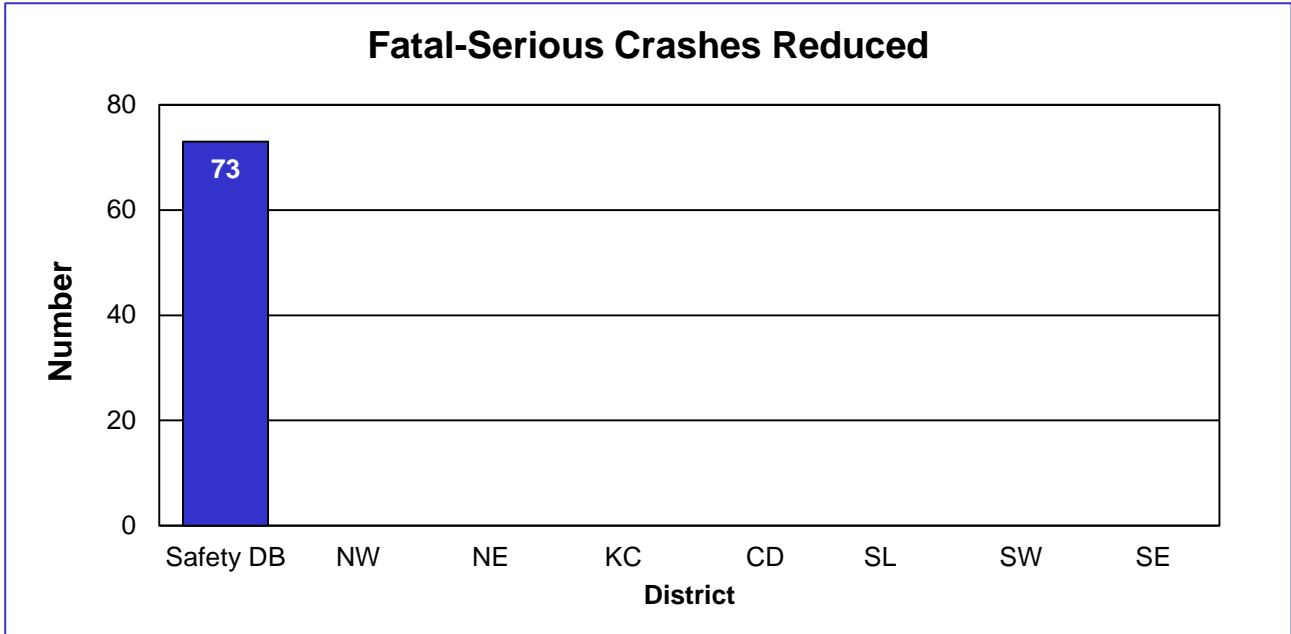
DDSA is also used for systemic analysis to identify high-risk roadway features that correlate with particular crash types. Severe crashes are widely dispersed, and their location and frequency fluctuate over time. Systemic analysis identifies locations that are at risk for severe crashes, even if there is not a high crash frequency. We can apply low-cost countermeasures to those locations. The benefit is wider, but a more targeted, safety investment.

The focus of this measure will be to track how DDSA is utilized in the districts to maximize safety benefits. The measure will track the number of fatal and serious injury crashes reduced for every safety dollar invested.

# Use Innovation to Improve Work Zone and System-wide Safety



Fatal and Serious Crash reductions are calculated over a ten year period. The Safety Design-Build will be utilized as a starting benchmark. The graph will help determine if the most effective safety treatments are being utilized. This is for FY 2019 Safety Funds.



This graph details the total number of Fatal-Serious Crashes reduced over a ten year period as determined by HSM analysis using data driven analysis for a 10 year period. This is for FY 2019 Safety Funds.

# Improve Partnerships with Other State Agencies and Leverage Private Sector

## Predictive Analytics to Optimize the Development of Enforcement Operations

**SAFETY CHAMPION:**  
Mark Shelton, District Engineer

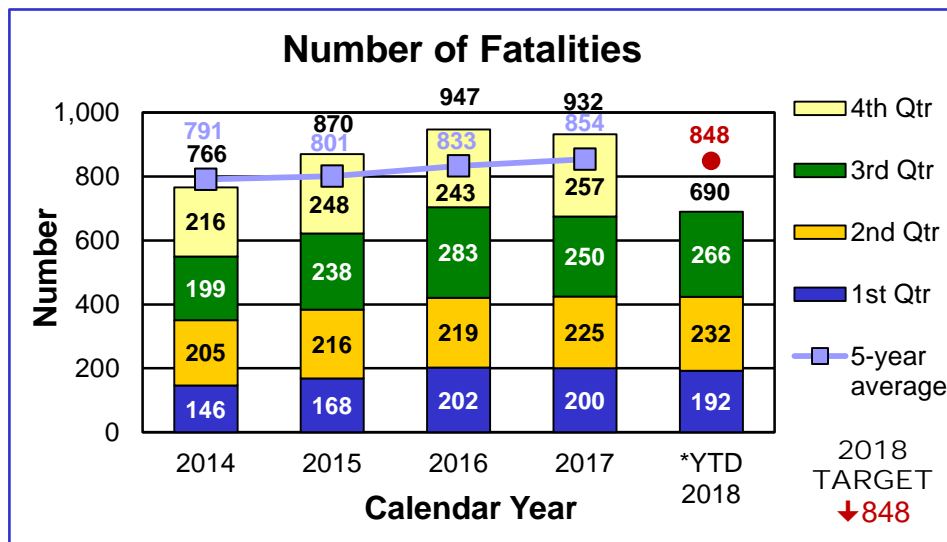
**PROJECT MANAGER:**  
Alex Wassman, Traffic Management and Operations Engineering

**PURPOSE OF THE PROJECT:**

In 2017, 932 people died in traffic crashes on Missouri roadways, and over 4,800 people were seriously injured. Research indicates 94 percent of crashes are the result of poor driver behavior. MoDOT's Blueprint is a comprehensive strategic plan of diverse countermeasures to help reduce the number of fatalities and serious injuries by discouraging poor driving behaviors or minimizing the consequences of such actions.

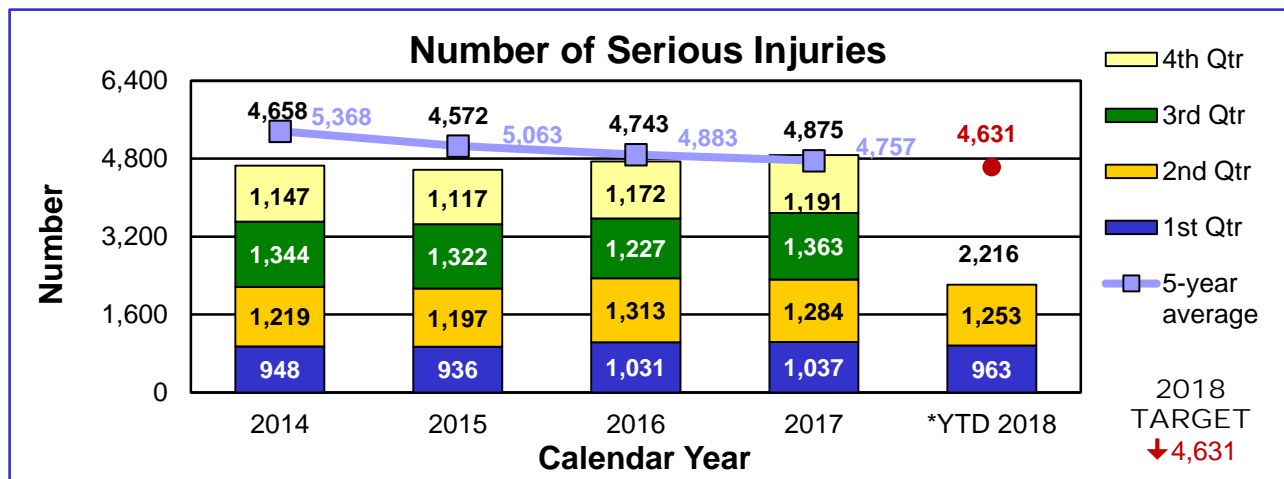
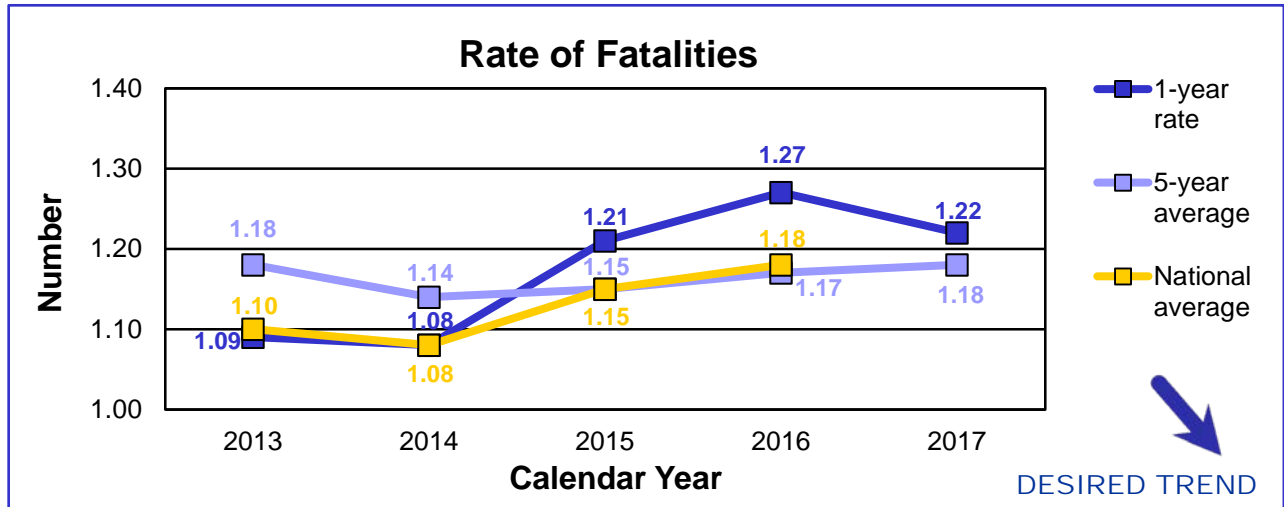
One key strategy to achieve this is high-visibility enforcement activities. However, with such a vast highway system and limited resources, it's impossible to deploy the necessary enforcement in all areas. To help with this, MoDOT has partnered with the Missouri State Highway Patrol to implement a predictive analytics tool to help MSHP strategically direct officers when and where they are needed most. The tool takes into account crash history, weather patterns, traffic volumes and regional events to identify areas most prone to traffic crashes.

As a result, MSHP, and eventually other law enforcement agencies, can use the information to make more informed decisions regarding the time and location of enforcement activities. This tool will provide improved efficiency of resources and, ultimately, fewer traffic crashes.

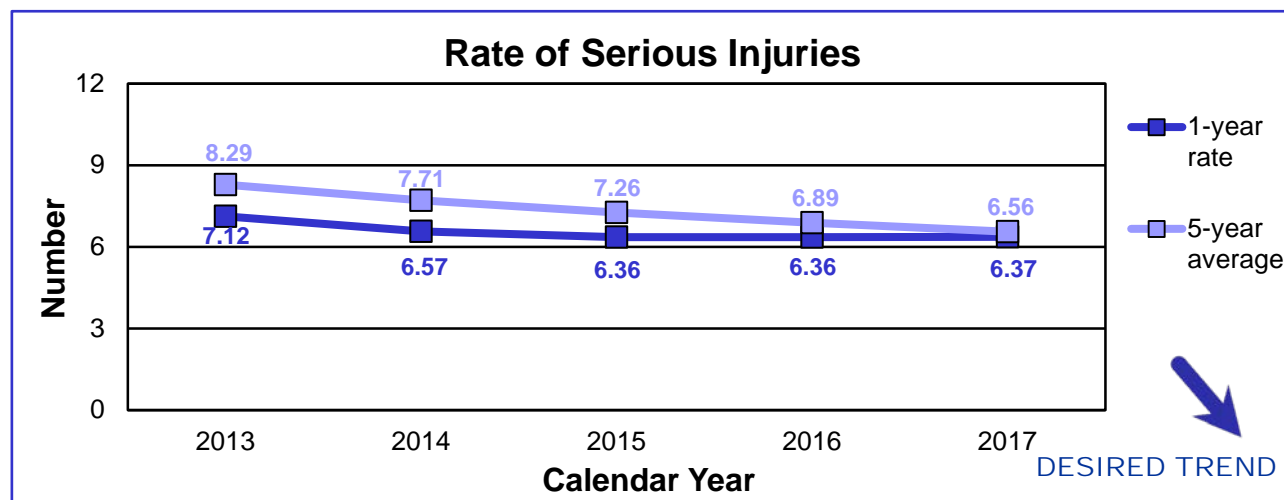


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# Improve Partnerships with Other State Agencies and Leverage Private Sector



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# Improve Partnerships with Other State Agencies and Leverage Private Sector

## Predictive Analytics to Optimize Winter Operations

### SAFETY CHAMPION:

Mark Shelton, District Engineer

### PROJECT MANAGER:

Alex Wassman, Traffic Management and Operations Engineering

### PURPOSE OF THE PROJECT:

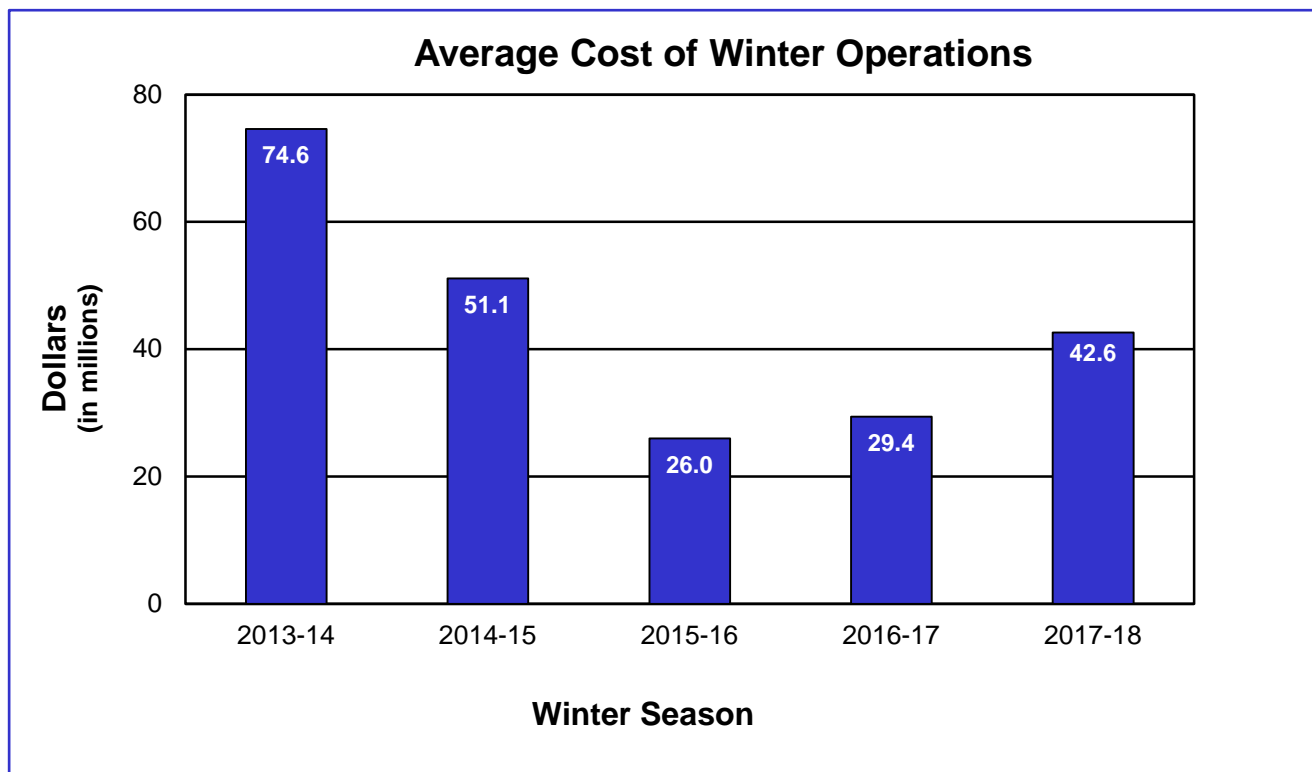
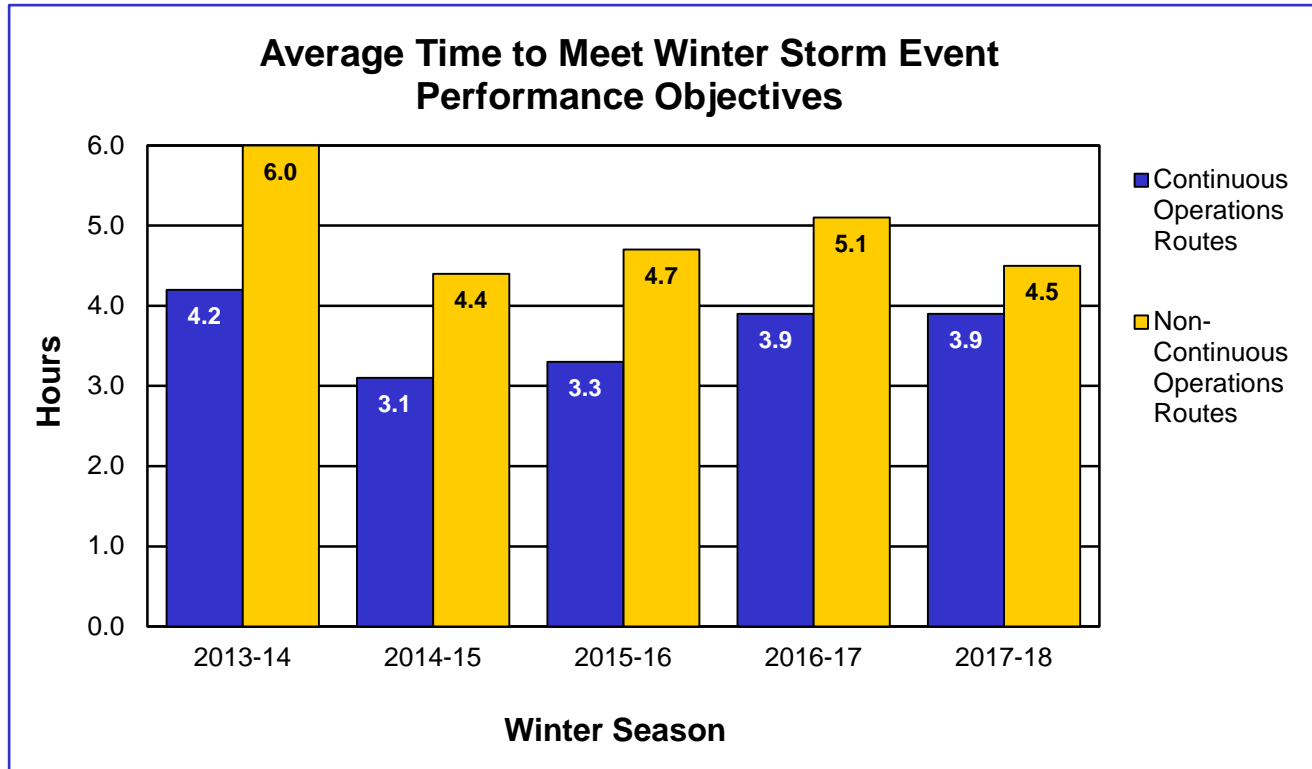
Costs associated with over or under preparedness of severe weather events aren't easily captured and are seldomly reported. Simple atmospheric weather forecasts do not tell the whole story and, as a result, MoDOT has sometimes incurred additional costs for storms which never materialized or been caught off guard when storms arrived in advance of expectations.

Road condition prediction is a better gauge for anticipating when conditions warrant treatment and advance traveler information. By partnering with FHWA on the Integrated Modeling for Road Condition Prediction pilot project, MoDOT will be the first DOT in the country to access a simple-to-use, web-based tool that utilizes both historic real-time data to more accurately predict when road conditions are likely to deteriorate. This will enable MoDOT staff to better prepare for adverse road conditions and strategically deploy crews where they are most needed.

This tool will provide the ability to predict conditions up to eight hours in the future and, conversely, enable accurate after-action reviews of MoDOT's response. This will facilitate improved efficiency of resources and timeliness in response.



# Improve Partnerships with Other State Agencies and Leverage Private Sector



# SERVICE

*Deliver transportation solutions of great value and use resources wisely*

- **Improve Communications**
  - Citizen's Guide to Transportation Funding
  - New Department Website
  - Better Traveler Information Map
- **Improve Project Management Tools**
  - Maintenance Management System
- **Develop Innovative Program Delivery**
  - Design-build, Design-build Finance and/or Operations and Maintenance Options
  - Value Engineering
- **Fleet and Facilities Optimization Strategy Implementation**

# Improve Communications

## Citizen's Guide to Transportation Funding

### SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

### PROJECT MANAGER:

Ben Reeser, Assistant Transportation Planning Director

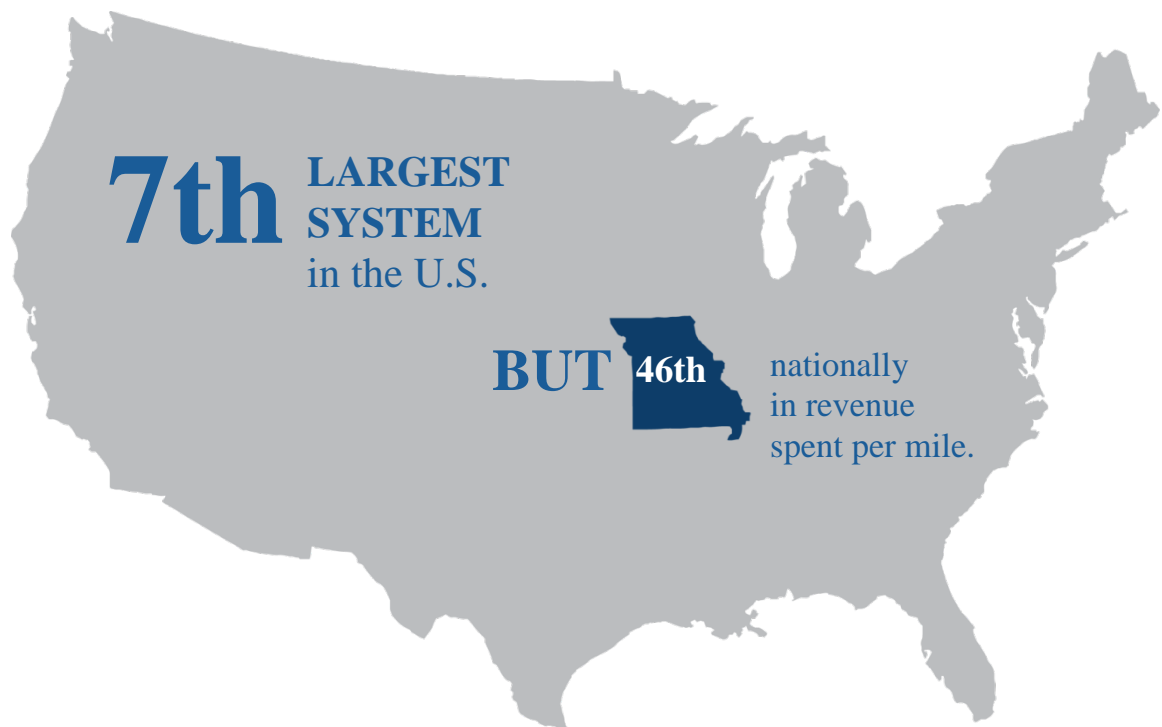
### PURPOSE OF THE PROJECT:

The Citizen's Guide to Transportation Funding serves as an educational piece for elected officials, stakeholders and the general public to address consistent concerns and misconceptions about transportation funding. The Citizen's Guide takes the complex issues of the state's transportation revenue, expenditures, system condition and unfunded needs and explains them in clear and easy-to-understand terms.

In conjunction with the Citizen's Guide, a transportation calculator was developed to show Missouri taxpayers how much they're paying each month in state and federal transportation taxes/fees and where the money is invested.

The Citizen's Guide can be found online at: [www.modot.org/guidetotransportation](http://www.modot.org/guidetotransportation).

The Financial Snapshot serves as an appendix to the Citizen's Guide and can be found online at: <http://www.modot.org/about/documents/FinancialSnapshot.pdf>



# Improve Communications

## New Department Website

### SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

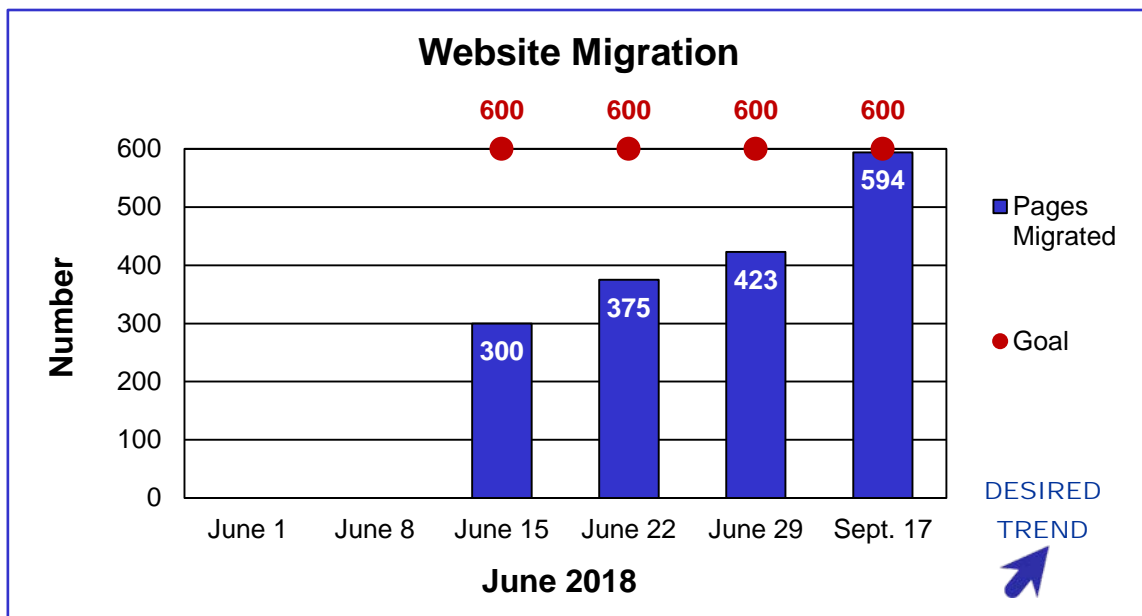
### PROJECT MANAGER:

Matt Hiebert, Assistant Communications Director

### PURPOSE OF THE PROJECT:

MoDOT's website had not been significantly upgraded since 2005. This has led to the site falling below current technological standards. As a result, customers using mobile devices have a difficult time navigating the site and employees must often spend unacceptably large amounts of time making simple updates to web pages. A Content Management System was chosen as the best solution to the multiple issues. Other factors necessitating the upgrade include:

- “Contribute” web updating software was no longer supported by manufacturer.
- A CMS is in-line with web technology used by many federal and state agencies.
- Mobile devices account for more than half of MoDOT's web traffic. A CMS will make our site “mobile ready” without a stripped down alternative site.
- Updating the website will be much easier for employees. Right now, it can take several minutes to an hour to update a simple webpage.
- A CMS offers ongoing upgrades that could potentially expand functionality for the public
- The effort will be performed in stages. It was estimated that an initial migration of 600 top visited pages by the end of summer 2018 would cover 99 percent of all MoDOT web traffic. Stage 1 is the migration of those top pages.



# Improve Communications

## Better Traveler Information Map

### SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

### PROJECT MANAGER:

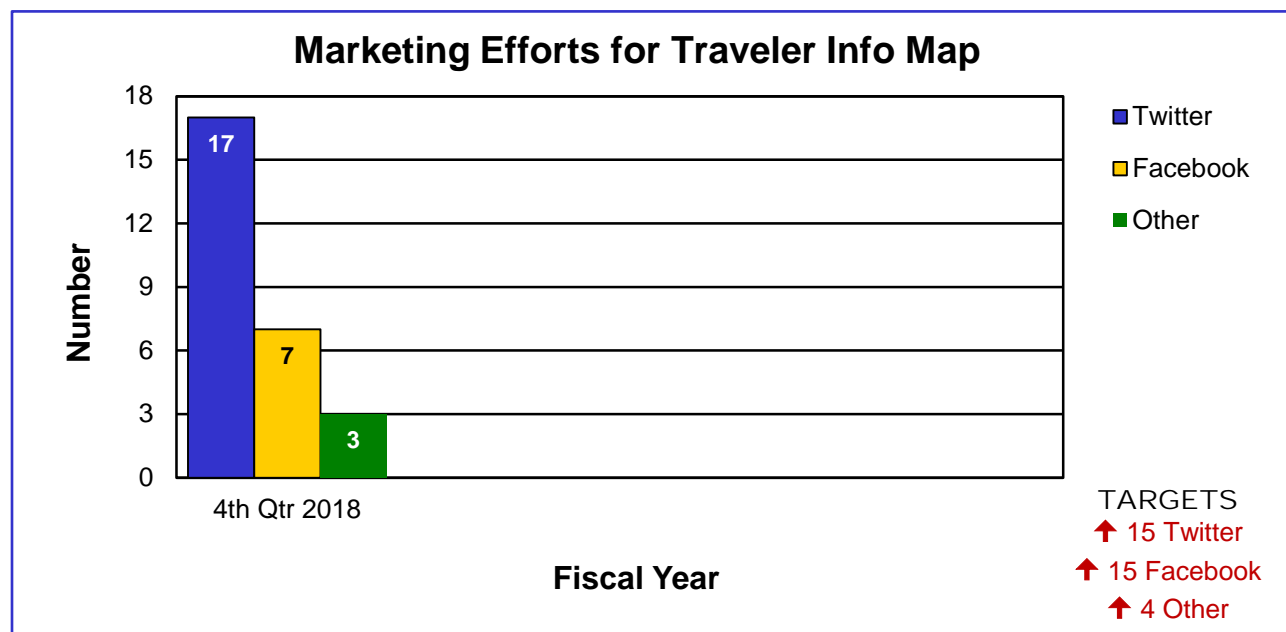
Matt Hiebert, Assistant Communications Director

### PURPOSE OF THE PROJECT:

The Traveler Information Map is MoDOT's highest-trafficked website. To increase traffic during "off season" quarters and to enhance potential and existing features, the Communications Division will work with other departments to:

- Collect input through a permanent online survey linked from the map.
- Enhance the text report to work better with the newly designed Drupal website.
- To actively promote the map in spring and summer (off seasons) to increase attention to the work zone, traffic and detour features.
- To explore and add technical features which will be described in narrative portion of this measure.

A team lead by the Northeast District has also added features that allow the addition of active links and the ability to name projects in the text reports. This allows district personnel to link to "more info" and associate text in the map with "branded" projects



*SURVEY CHART UNDER DEVELOPMENT*

# Improve Project Management Tools

## Maintenance Management System

### SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

### PROJECT MANAGER

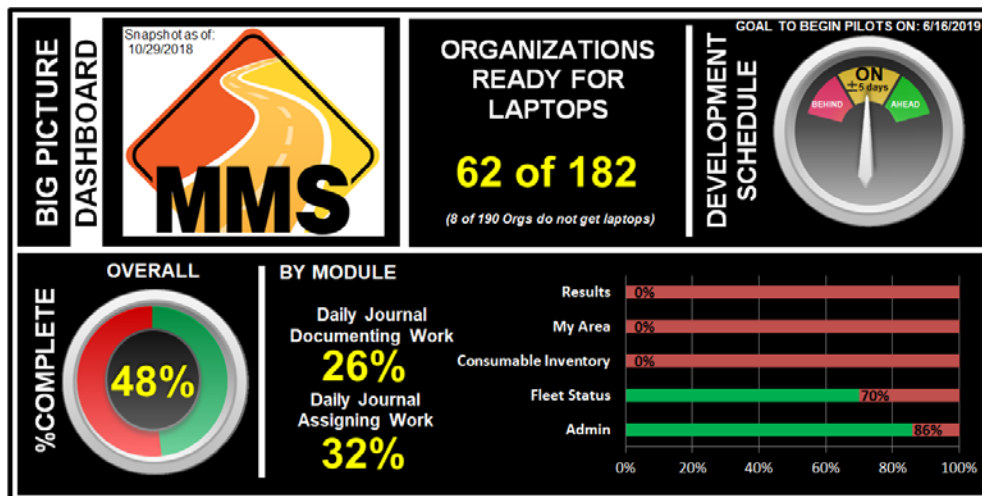
Mike Rinehart, Maintenance Liaison Engineer

### PURPOSE OF THE PROJECT:

With maintenance staff constituting about 54 percent of salaried employment at MoDOT and with about 23 percent of MoDOT's budget being used to accomplish maintenance related tasks, it makes sense to look at the challenges that staff has in recording and finding data related to what gets accomplished by this important organizational division. Multiple software programs, difficulty in documenting work and challenges in finding maintenance-related information is substantial.

MoDOT intends to create a Maintenance Management System that will be a simple to use, web-based program for capturing and easily reporting data related to what gets accomplished in maintenance. The size and scope of the project has prompted a phased approach to get a significant portion of the project completed under Phase 1.

The MMS Phase 1 project is currently under development with implementation scheduled for the pilot locations sometime in mid-2019. Full roll-out of Phase 1 is desired by the end of 2019.



*CHART UNDER DEVELOPMENT*

# Develop Innovative Program Delivery

## Design-Build, Design-Build Finance, and/or Operations and Maintenance Options

### SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

### PROJECT MANAGER:

Kenny Voss, Assistant State Design Engineer

### PURPOSE OF THE PROJECT:

Design-build is a project delivery method in which the design and construction services are contracted by a single design-build contractor. This provides a single point of responsibility in the contract to reduce risks and overall costs to the state.

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.

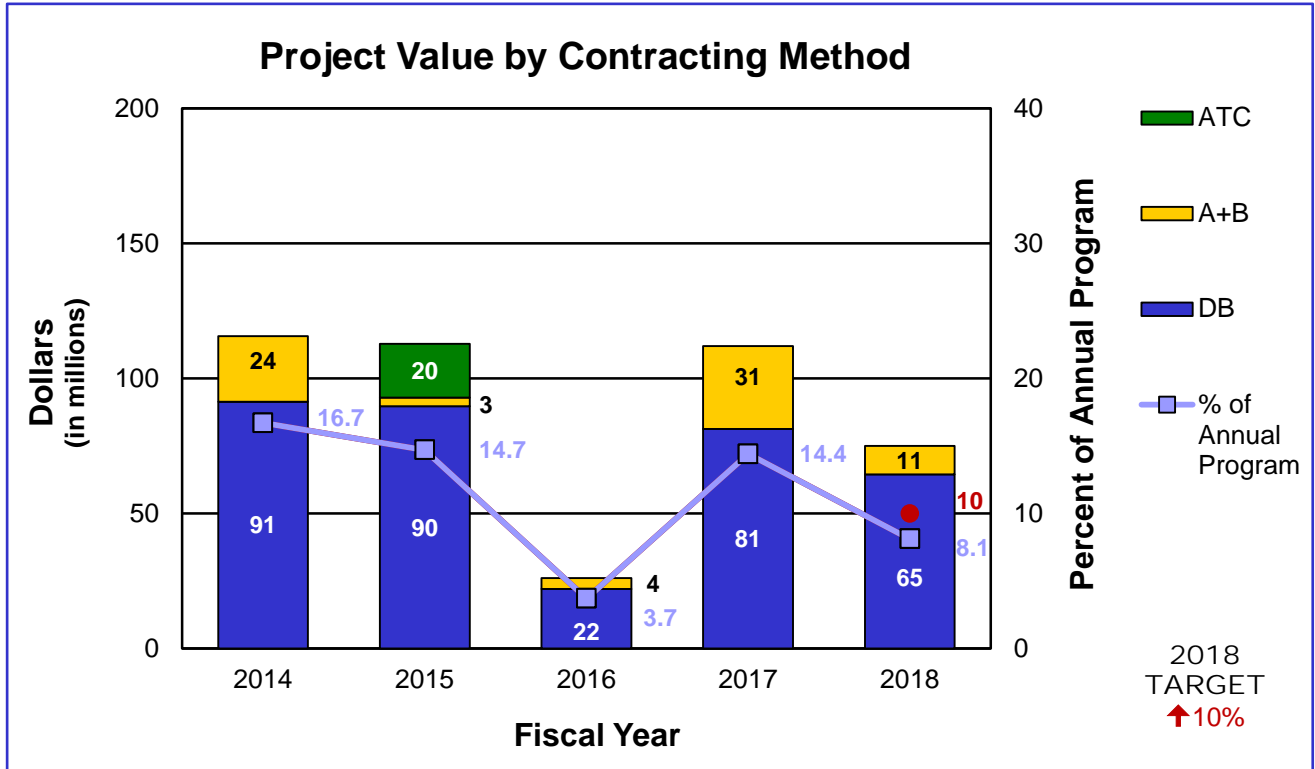
MoDOT evaluates project risks such as size (cost), type (preservation, rehabilitation or reconstruction) and complexity (opportunity for innovation and speed) when determining project delivery methods. The advantages of MoDOT's innovative contracting methods are as follows:

- 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.

# Develop Innovative Program Delivery





# Develop Innovative Program Delivery

## Value Engineering

### SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

### PROJECT MANAGER:

Kenny Voss, Assistant State Design Engineer

### PURPOSE OF THE PROJECT:

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.

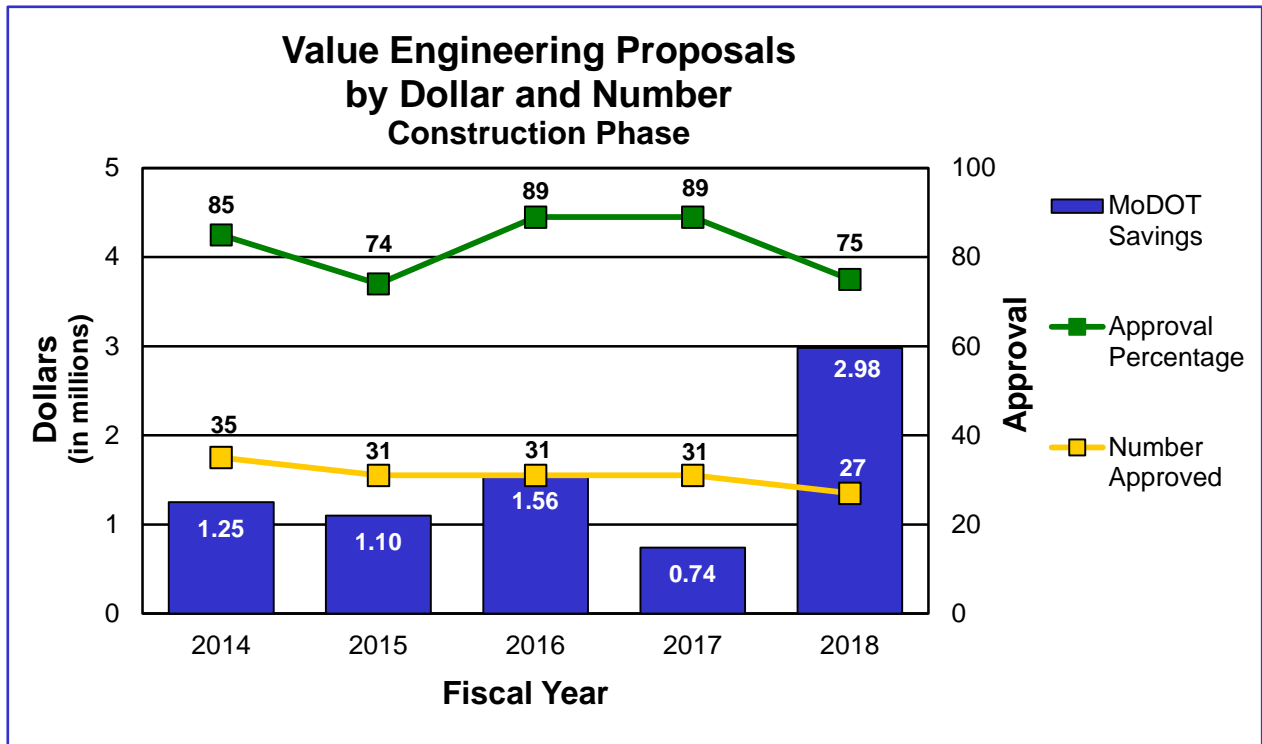
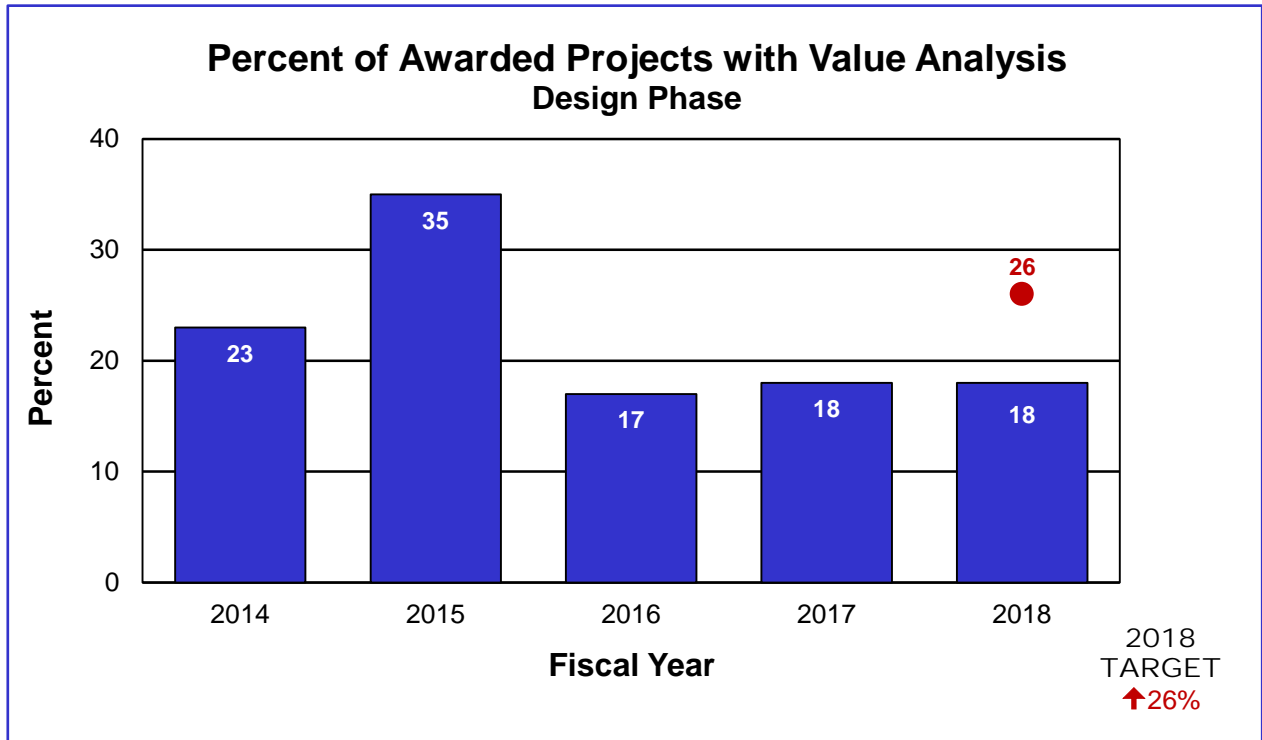
MoDOT uses design-phase value analysis to remove unnecessary scope, reduce project costs and improve project flexibility. For fiscal year 2018, 18 percent of applicable projects underwent some form of value analysis during design, which is below target for design-phase value analyses. The percentage 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 VECPs 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.

# Develop Innovative Program Delivery



# Fleet and Facilities Optimization Strategy Implementation

## Fleet Optimization

SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

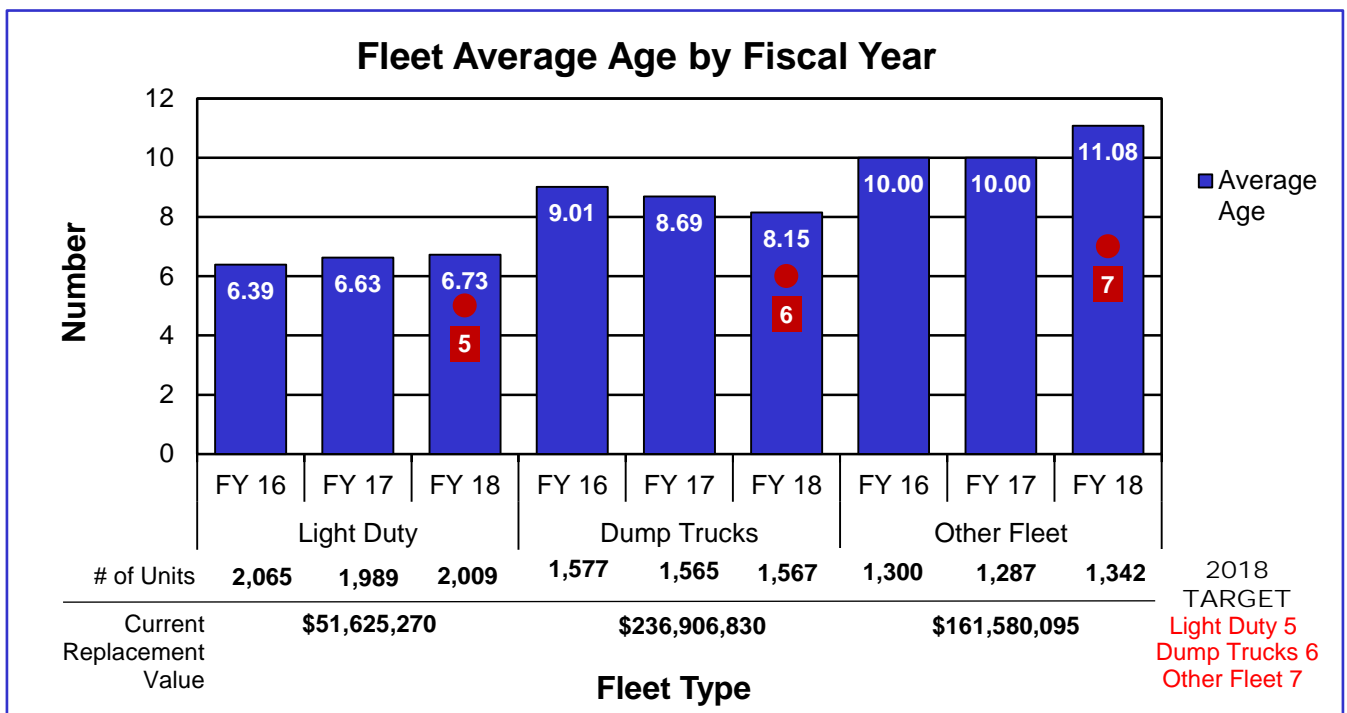
PROJECT MANAGER:

Amy Niederhelm, Central Office General Services Manager

PURPOSE OF THE PROJECT:

MoDOT must keep a dependable fleet to meet customer's needs. The fleet age is the best indication of fleet condition. The large investment in fleet, with a replacement value over \$450 million, emphasizes the importance. Optimization of fleet is identified as one of MoDOT's Sharpening our Strategic Vision Initiatives. MoDOT is moving toward an asset management approach for fleet using data to plan fleet purchases over the next several years. MoDOT also strives to use resources wisely by improving fuel efficiency. This is critical since MoDOT budgeted over \$25 million for fuel in fiscal year 2018.

In FY 2018, the average age for light duty fleet and other fleet (includes equipment such as backhoes, loaders, tractors and specialty items like under bridge inspection units and stripers) shows gradual increase each year. The dump truck fleet units show gradual decreases in the average age which has been attributed to purchasing more dump trucks versus other fleet in recent years. The goal is for the average age to be half the department's age threshold.



# Fleet and Facilities Optimization Strategy Implementation

## Facilities Optimization

### SERVICE CHAMPION:

Eric Schroeter, State Design Engineer

### PROJECT MANAGER:

Dave Belanger, Central Office General Services Manager

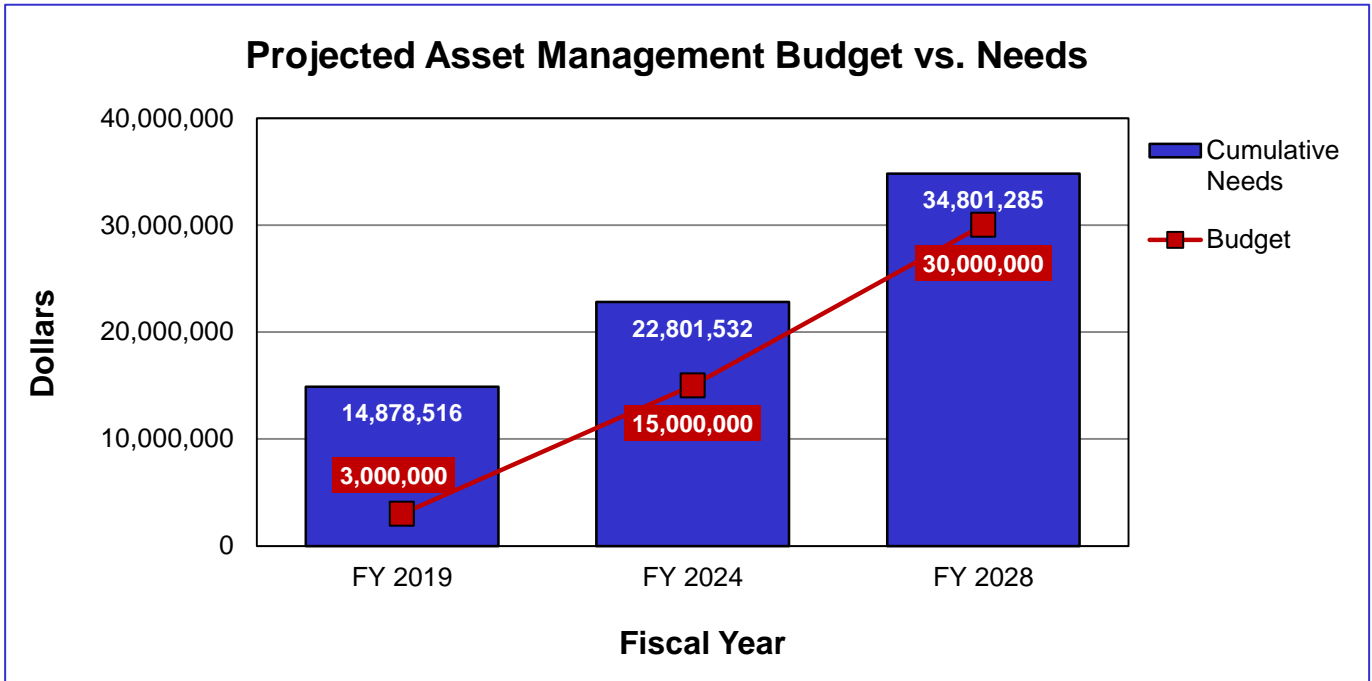
### PURPOSE OF THE PROJECT:

Facilities Optimization provides a similar asset management process for MoDOT facilities as what would be seen in the Maintenance Division for roadways. Like the STIP, MoDOT facilities assets are placed into a rolling five-year budget based on needs. Facilities are currently funded at \$7.2 million annually for Capital Improvement and Asset Management purposes. The charts below depict our progress toward meeting our goal of having facilities that meet minimum needs and the systems maintained which keep the facility operational.

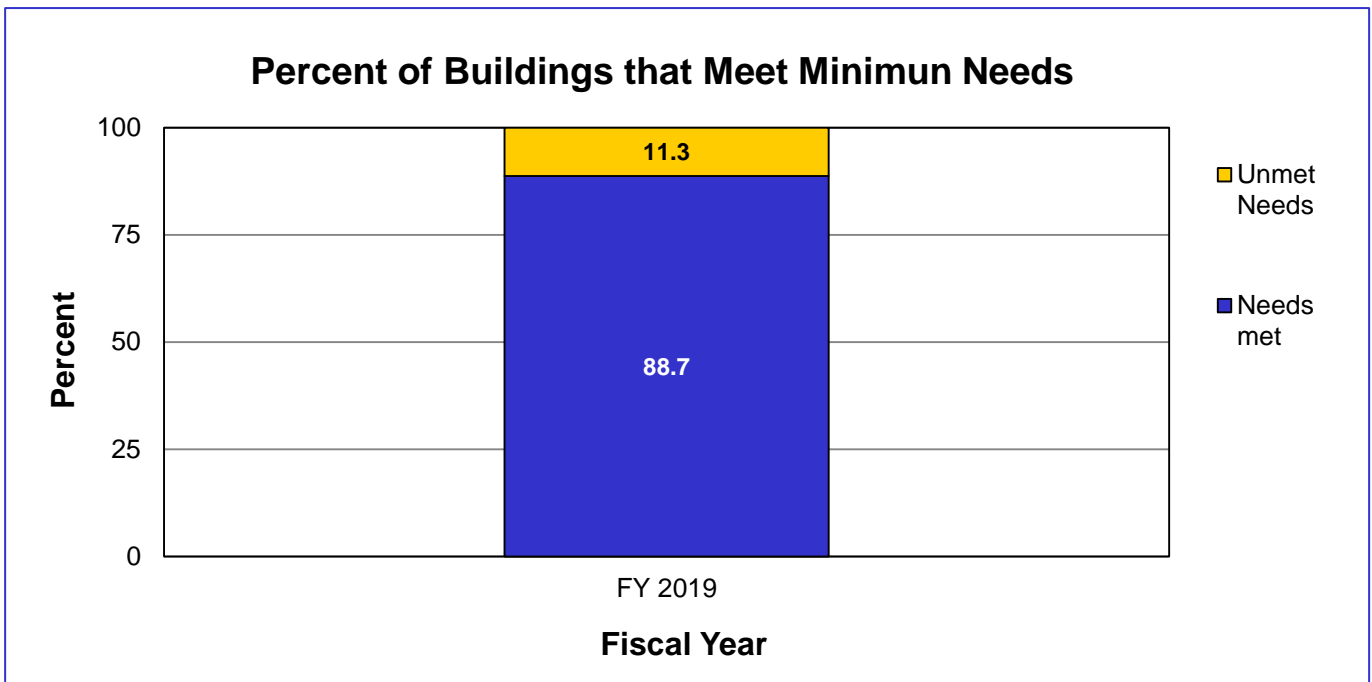
Facilities staff utilizes Voluntary Facilities Accreditation which is a computer-based program that breaks down buildings into numerous individual systems with each having its own specified lifecycle. Based on actual annual inspections, the asset's lifecycle is determined to be either due for early replacement, replace at end of calculated life, or the lifecycle can be extended based on actual observed conditions. These options allow MoDOT the flexibility to replace or update assets in order to get the optimum useful life from each asset.

Facilities Asset Management is currently funded using \$3 million annually from the Capital Improvements budget. The funding is split eight ways between all district and Central Office facilities giving each approximately \$250,000. Due to ever-changing conditions at our facilities, project discretion is left in the hands of the Long Term Facilities Planning Team and the respective General Services Managers. Long Term Facilities is currently funded at \$3.6 million annually. In 2014, the team recognized in order to operate; facilities have many necessities including space for mechanics to work inside during inclement weather, adequate restrooms for employees, sufficient meeting space for muster sessions and cold storage for operational supplies and equipment. The amount budgeted for weigh scale needs and Welcome Centers is \$600,000.

# Fleet and Facilities Optimization Strategy Implementation



Note: Budget of \$3 million annually over 10 year period.



# STABILITY

*Preserve and operate a reliable transportation system with an engaged workforce*

- **Increase Employee Engagement and Recognition**
  - Pay Plan
  - Training and Certifications
  - Evaluate Job Descriptions
  - Leadership Coins
  - Succession Planning
- **Research and Deploy Alternative Funding Solutions**
  - Cross-cabinet Collaboration
- **Leverage Innovations to Reduce Costs and Improve Service Quality**
- **Cost Share Program with Local Government Statewide**

# Increase Employee Engagement and Recognition

## Employee Engagement and Cost of Turnover

### STABILITY CHAMPION:

Micki Knudsen, Human Resources Director

### PROJECT MANAGER:

Paul Imhoff, Special Projects Coordinator

### PURPOSE OF THE PROJECT:

Employee turnover not only has a direct impact on MoDOT's ability to preserve and operate a reliable transportation system, but also is a reflection of the level of employee engagement within MoDOT. Increasing employee engagement and reducing turnover and its subsequent costs are prudent goals toward organizational stability and a wise use of taxpayer dollars.

For the first quarter of fiscal year 2019, MoDOT turned over 186 employees. If turnover rates stay consistent over the next three quarters, it's estimated that total turnover will be 744. Applying a Society for Human Resources Management turnover cost calculator to these estimates finds the hard cost of backfilling positions to be \$2.3 million for FY 2019. For the same period, the soft cost of turnover is estimated to be \$38 million. The estimated FY 2019 total turnover cost of \$40.3 million is a 31.2 percent increase over FY 2018.

Efforts to improve the stability of MoDOT by increasing employee engagement are underway.

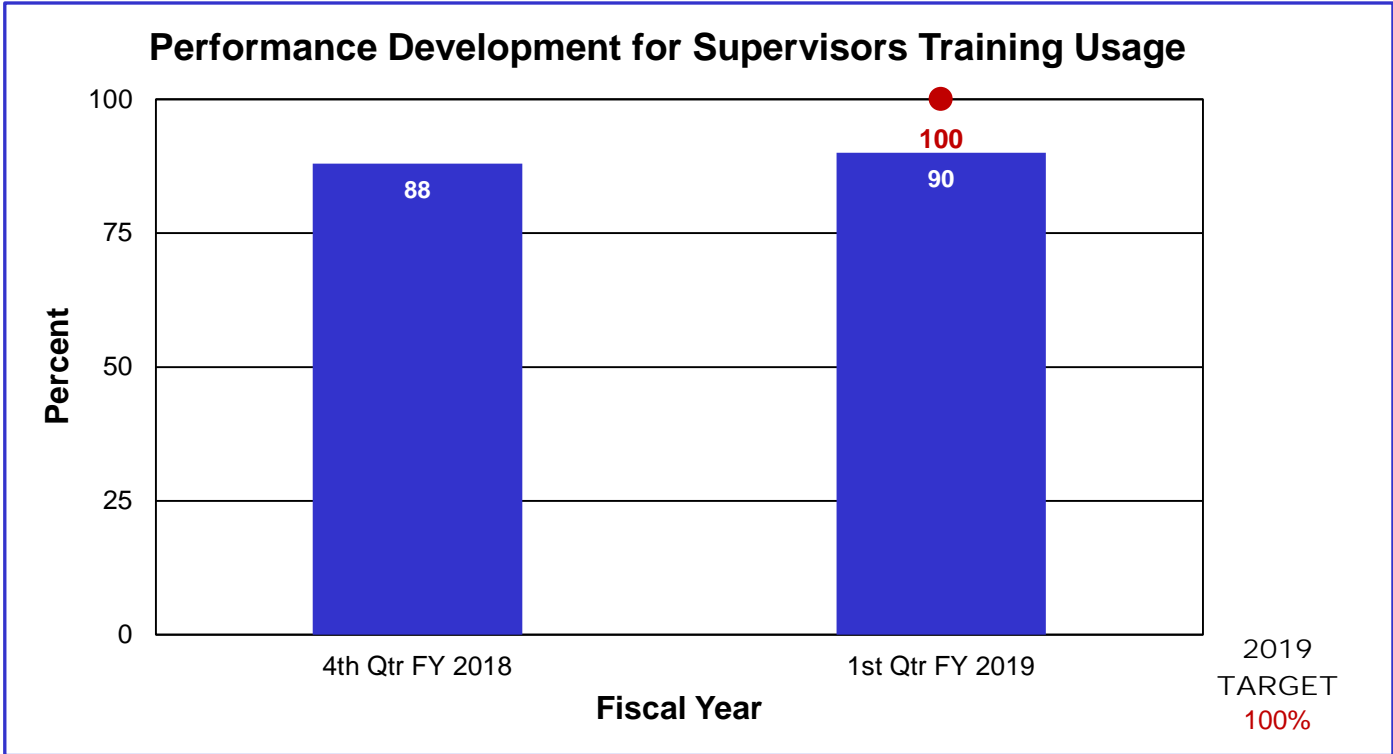
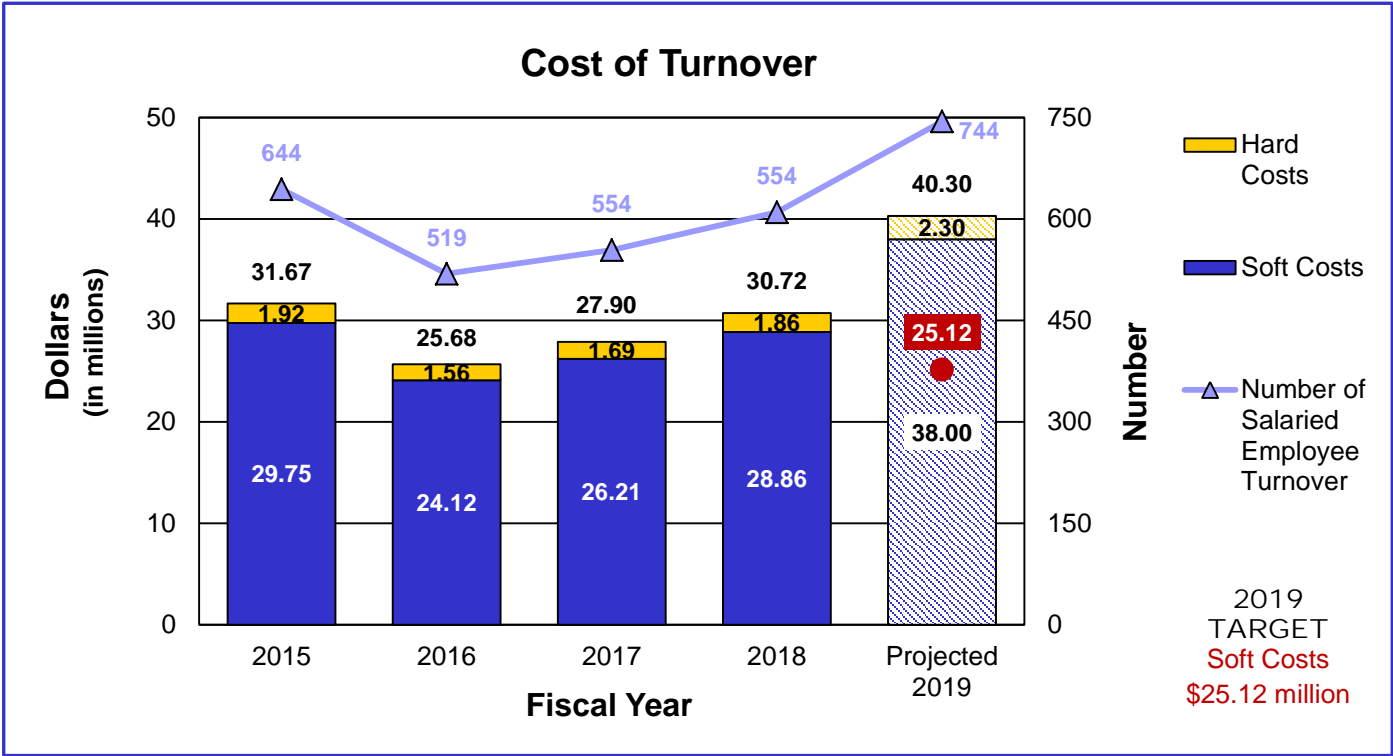
- **Pay Plan:** Part of a five-year pay strategy will be implemented Jan. 1, 2019, in the form of a Cost Of Living Adjustment. The pay increase will be \$700 annually for full-time and permanent part-time employees earning less than \$70,000 per year, and a 1 percent increase for employees earning \$70,000 or more.
- **Training and Certifications:**
  - **Performance Development:** Performance development is about helping each individual person at MoDOT perform their best each day by having more regular conversations with their supervisor. The approach is a combination of performance management and employee development and focuses on three core principles: establishing expectations, regularly coaching and creating accountability.
    - The implementation of the performance development approach had two phases and was launched at MoDOT in March 2018.
      - Phase one focused on communicating information and offering resources to everyone at MoDOT to support them in putting performance development into practice. Specific steps taken in this phase were a series of statewide emails, a statewide live stream information session with a Q&A, policy revisions and the release of a performance development SharePoint site.

# Increase Employee Engagement and Recognition

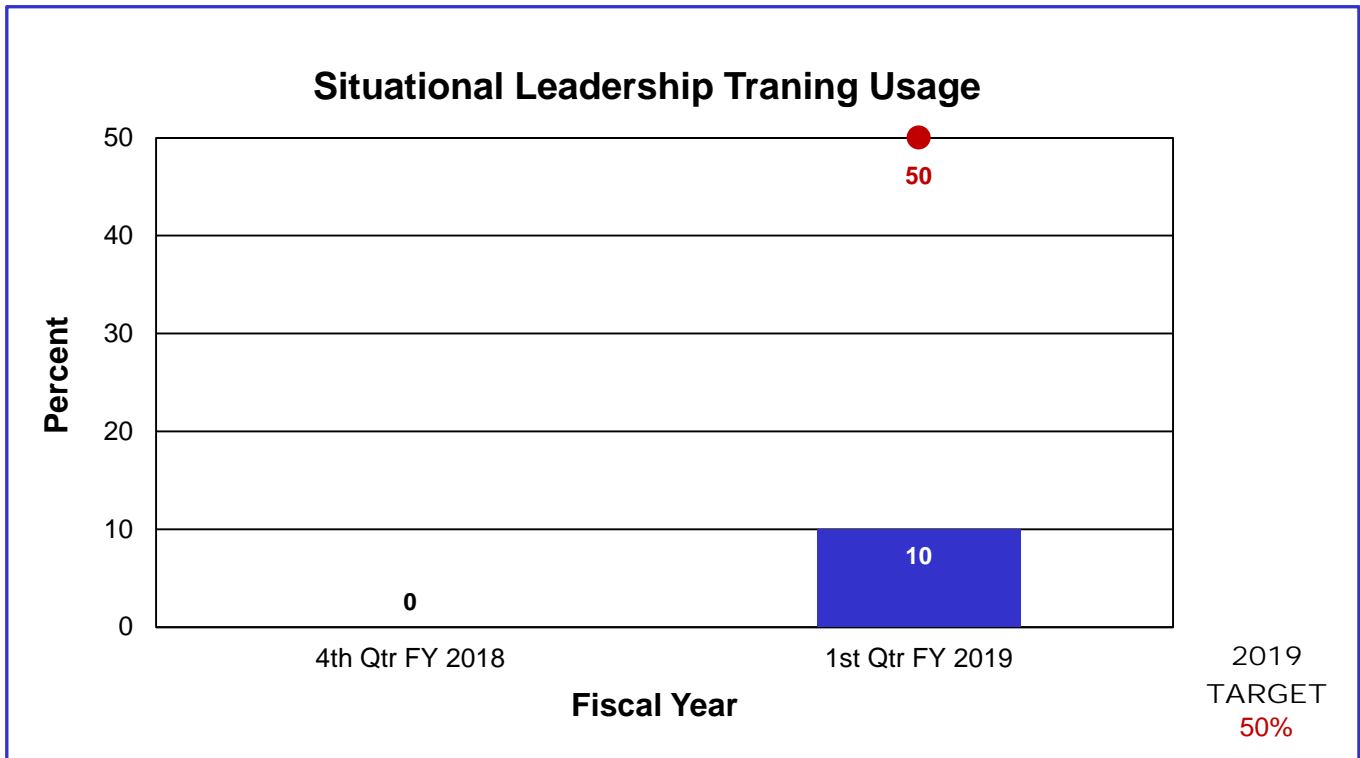
- Phase two focused on building a deeper organizational understanding and expertise with the core principles of performance development through training. Two principle trainings began being offered: *Performance Development for Supervisors* and *Situational Leadership*.
  - *Performance Development for Supervisors* is a mandatory training that all current and new supervisors are required to attend. The training was first made available to all current supervisors in June 2018. All new supervisors will attend the training as part of MoDOT's Core Workforce Values Training for Supervisors.
  - *Situational Leadership* is an e-learning training in MoDOT U and is offered to those in a supervisory role. It was first made available in August 2018. It is an optional training for individuals in a supervisory role prior to Sept. 1, 2018. All supervisors hired or promoted into a supervisory role for the first time after Sept. 1, 2018 are required to go through the training as a part of MoDOT's Core Workforce Values Training for Supervisors. The benchmark for this training is provided by the Center for Leadership Studies and represents the usage rate organizations typically see in the first year the training is offered.
- The implementation of performance development was completed as of Oct. 31, 2018. MoDOT will now focus on continuous improvement in the organization with this effort.
- **Registered Apprenticeship Program:** A registered apprenticeship program will be made available to maintenance career ladder employees in January 2019. This program provides an opportunity for eligible veteran employees to use GI benefits to receive an additional monthly stipend. In the future, the program will provide non-veteran, maintenance career ladder employees the potential to earn college credit through on-the-job training.
- **Leadership Coins:** The *Leadership in Action* recognition coin passing program has been in effect since September 2017. The purpose of the program is for coin holders to look for leaders within MoDOT who are actively demonstrating MoDOT's Values and/or moving MoDOT forward in the areas of Safety, Service or Stability. Each coin will be passed ten times and will be subsequently retired. There are currently 159 coins in circulation that have been presented nearly 440 times. Two coins have been retired.
- **Succession Planning:** The draft results of the external organizational assessment and succession planning study are being reviewed for information that could aid MoDOT in making improvements to help sustain its current high performance well into the future.
- **Evaluate Job Descriptions:** This project will follow the organizational assessment and succession planning study work.



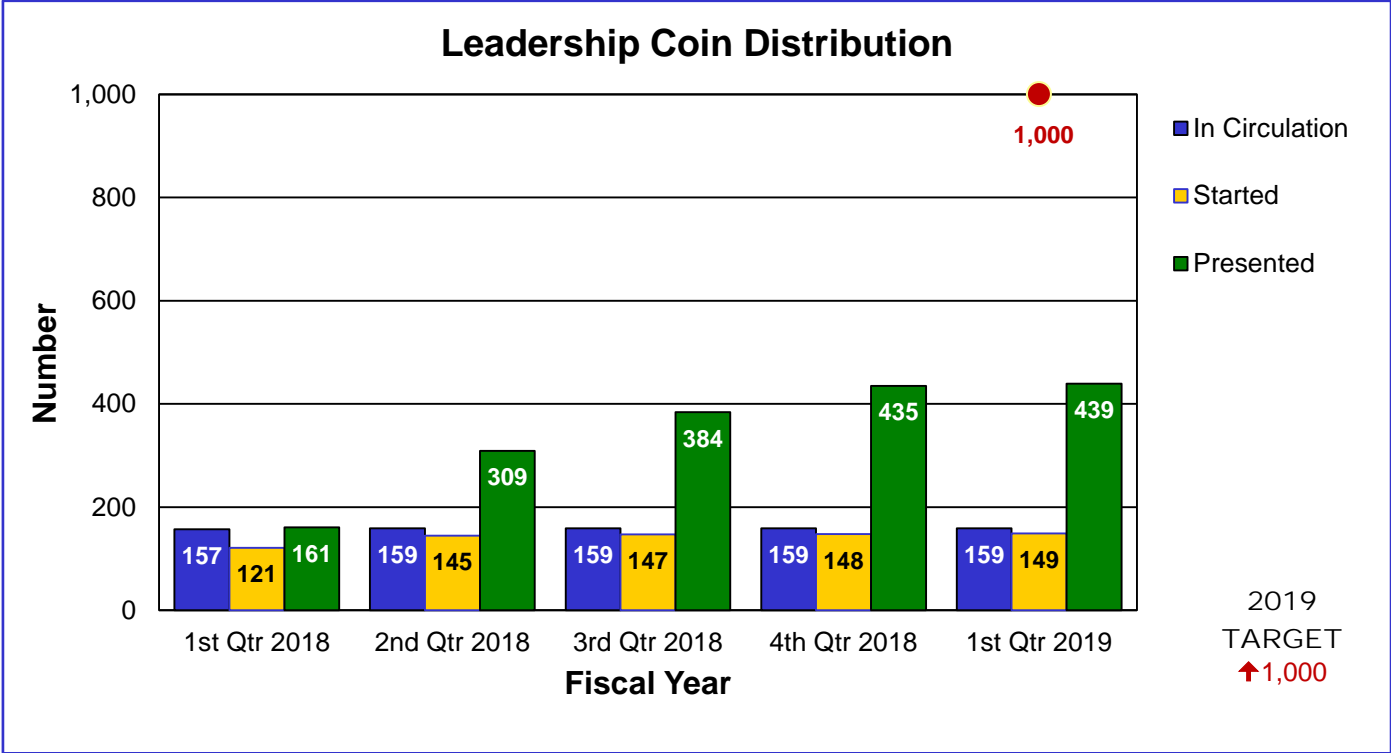
# Increase Employee Engagement and Recognition



# Increase Employee Engagement and Recognition



# Increase Employee Engagement and Recognition



# Research and Deploy Alternative Funding Solutions

## Cross-Cabinet Collaboration

### STABILITY CHAMPION:

Micki Knudsen, Human Resources Director

### PROJECT MANAGER:

Liz Prestwood, Policy/Innovation Program Manager

### PURPOSE OF THE PROJECT:

The current Missouri vehicle registration fee is based on taxable horsepower. Taxable horse power is an archaic measure and does not represent vehicle power, weight or impact caused on infrastructure. Missouri is the only state using taxable horsepower to assess vehicle registration fees.

MoDOT has applied for and received Surface Transportation System Funding Alternatives federal grant funding to implement the passenger vehicle MPG equity fee. In 2016, MoDOT received \$250,000 STSFA funds to model test the feasibility of implementing an MPG registration fee. In 2017, MoDOT received a second award of \$2.7 million for implementation and deployment of the MPG equity registration fee.

The initial work and deliverables from MoDOT STSFA activities modeled how an MPG fee could be used to supplement and or replace the current registration fee schedule. The project team continues to work with Missouri Department of Revenue to explore existing system capabilities to collect this type of fee and identify gaps. Full deployment activities involve the execution of economic models with system gap implementation of new hardware and software, implement a system concept of operations and business process transformation, utilization of technology to collect the registration fee, and public education and outreach effort for full adoption of the new MPG registration fee.

The principal project's goals are to generate revenue in a fair and equitable manner and to ensure privacy and security for Missouri drivers while utilizing current adaptable technologies to collect and administer the fee.

*CHART UNDER DEVELOPMENT*

# Leverage Innovations to Reduce Costs and Improve Service Quality

## Innovations Challenge Submissions and Best Practices

### STABILITY CHAMPION:

Micki Knudsen, Human Resources Director

### PROJECT MANAGER:

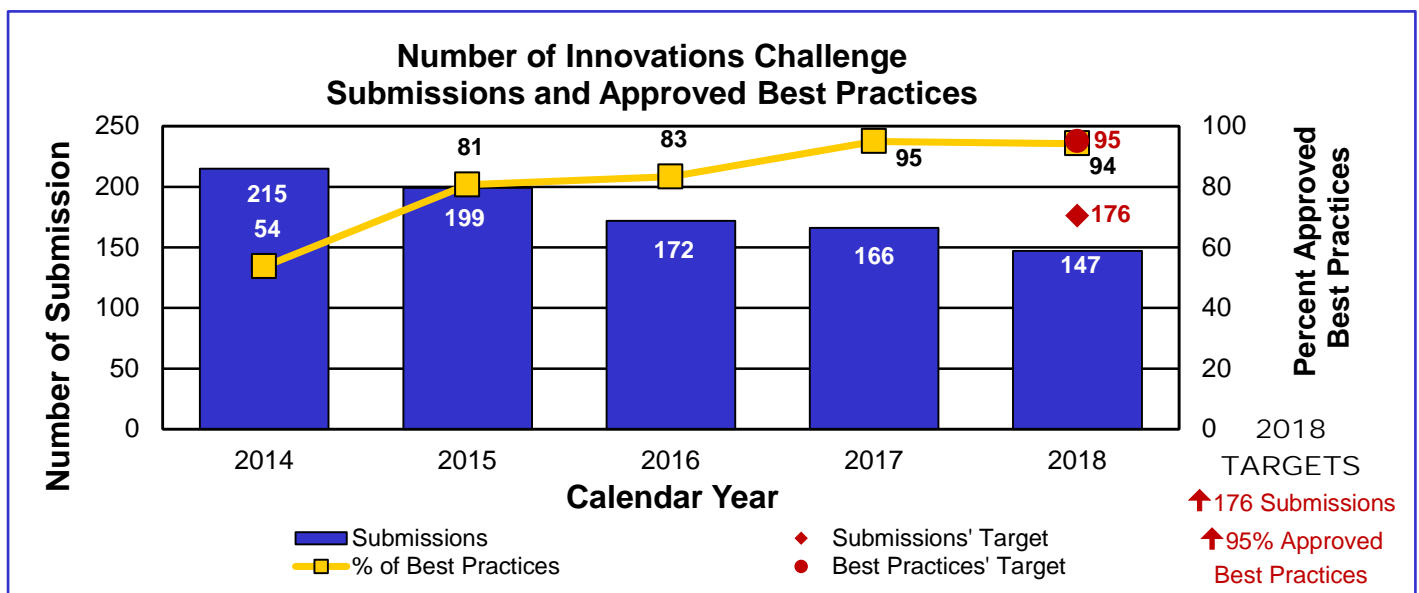
Kelly Backues, Transportation Planning Specialist

### PURPOSE OF THE PROJECT:

Preserving and operating a reliable transportation system takes an engaged workforce. MoDOT's Innovations Challenge program provides employees opportunity and recognition for their efforts to leverage innovations so the department may reduce costs and improve service quality.

There were 147 submissions for this year's Innovations Challenge, which is 84 percent of the annual target of 176. The annual submission total represents an 11 percent decrease from last year. Submissions were lower in four of the eight competing areas. The St. Louis District had the largest increase (142 percent) and the Kansas City District had the largest decrease (52 percent). The 2018 target for approved best practices has been set at 57. Ninety-four percent of the 52 showcase participants were chosen as a best practice in 2018 which is only one percent below the 95 percent target.

Transportation Planning staff is working with location coordinators and regional managers to implement strategies to increase participation. The pre-showcase evaluation process continues to be expanded to ensure all affected areas of the department have input, which should result in higher quality innovations at the showcase. A new online virtual showcase is being promoted to employees to generate more interest in the program.



# Leverage Innovations to Reduce Costs and Improve Service Quality

## Number of submissions by location:

Location	Total 2018	Total 2017	Change +/-	Percentage Change +/-
Northwest District	13	13	0	0%
Northeast District	20	19	1	5%
Kansas City District	14	29	-15	-52%
Central District	11	22	-11	-50%
St. Louis District	17	7	10	142%
Southwest District	21	28	-7	-25%
Southeast District	20	25	-5	-25%
Central Office	31	23	8	35%
<b>Total Submissions</b>	<b>147</b>	<b>166</b>	<b>-6</b>	<b>-11%</b>

## 2018 Approved Best Practices

- Automatic Flagger Assistance Device (SW)
- Back-Up Camera (NW)
- Barricade Leg Spring (SW)
- Barricade Trailer Lighting System (SW)
- BDB Toolbar (TP)
- Bridge and Culvert Inspection Maps (TP)
- Chipper Truck Hitch (SW)
- Curlex Unoller-A (NE)
- Curlex Unroller-B (NE)
- Emergency Callout Meal Expense Payments (NW)
- Flagger Cone (NE)
- Flagger Radio (SE)
- Florida Flume (SL)
- Fluorescent Green Flagger Cone (SW)
- Foldable Tailgate Chute (SE)
- Full-Manual Signal Control (NW)
- Gas-Powered Post Driver (SW)
- Guardrail Height Jig (DE)
- Highway Grant Management System (MT)
- Ice Ban Additive (SL)
- JAWS Debris Remover (KC)
- Lens Protective Wrap (SW)
- Maintenance Job Numbers (MT)
- Maintenance Training Academy (KC)
- Mobile Platform (NE)
- One-Click Travelway Maintenance (TP)
- Pavement Repair Photo Documentation (CD)
- Portable Hydraulic Pump Station (NE)
- Professional Development Institute (HR)
- Project Prioritization Tool (SW)
- Removable Mud Flaps (NE)
- Retractable Mic Cord (SW)
- Road Trippin' (NE)
- Safety Improvements Design-Build Project (SL)
- Sequential Channelizer LED Lights (SW)
- Sign Bracket for Columns and Poles (KC)
- Skid Steer Culvert Cleaner (SE)
- Skid Steer-Mounted Weedeater (NE)
- Sponge Sprayer (NW)
- Telespar Organizer (NE)
- Texas DOT Barrier (SL)
- ThrU-Turns (SL)
- Traffic Counter Site Conversions (TP)
- Trailer Pullout Ladder (SE)
- Transportation Funding Calculators (TP)
- Time Reporting System-OT Enhancement (IS)
- Truck Ladder Extension (SW)
- Turn Lane Warrants (NW)
- Up-To-Date Location Sketches (SE)

# Cost Share Program with Local Government Statewide

## Local Entity Cash Leveraged for Cost Share Program

**STABILITY CHAMPION:**  
Micki Knudsen, Human Resources Director

**PROJECT MANAGER:**  
Todd Grosvenor, Assistant Financial Services Director

**PURPOSE OF THE PROJECT:**  
The Cost Share Program builds partnerships with local entities to pool efforts and resources to deliver state highway and bridge projects. When local entities are willing to partner with MoDOT, MoDOT matches their investment up to 50 percent of the project cost. MoDOT works in cooperation with the Department of Economic Development with local entities to determine when targeted investments can be made to create jobs and may provide up to 100 percent of the project cost.

On Jan. 8, 2014, the Missouri Highways and Transportation Commission suspended the Cost Share Program due to declining transportation funding.

On Jan. 4, 2017, the Missouri Highways and Transportation Commission reactivated the Cost Share Program for FY 2018. As of the first quarter of FY 2019, Cost Share Program funds totaling \$9.1 million were approved for six projects. For every \$1 of Cost Share Program funds, local entities provided \$1.59 of cash, which is \$0.59 above the target.

