OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Becky Allmeroth, State Maintenance Engineer

Tracker

MEASURES OF DEPARTMENTAL PERFORMANCE

Missourians expect to get to their destinations on time, without delay regardless of their choice of travel mode. We coordinate and collaborate with our transportation partners throughout the state to keep people and goods moving freely and efficiently. We also maintain and operate the transportation system in a manner to minimize the impact to our customers and partners.

OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Travel times and reliability on major routes – 5a

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Alex Wassman
Traffic Management and Operations Engineer

PURPOSE OF THE MEASURE:
This measure tracks the mobility of significant state routes in St. Louis, Kansas City, Springfield and Columbia.

MEASUREMENT AND DATA COLLECTION:
Travel time data is collected continuously via wireless technology. To assess mobility, MoDOT compares travel times during rush hour to free-flow conditions where vehicles can travel at the posted speed limit. This measure also assesses reliability, an indicator of how variable those travel times are on a daily basis.

The charts in this measure show the average travel time and the 95th percentile travel time, which is the time motorists should plan in order to reach their destinations on time 95 percent of the time.

The maps display the mobility of specific sections of roadways during rush hour.

The target for this measure is updated quarterly. This target is established by projecting a 10 percent improvement over the same quarter of the previous year. The minimum value for the target time is 10 minutes. This corresponds to the time it takes to travel 10 miles at the posted speed limit of 60 miles per hour.

During the second quarter of 2018, average travel times in St. Louis and Kansas City were generally longer compared to the same period last year. In the second quarter of 2018, the average 10-mile travel time in St. Louis was 10 minutes, 40 seconds during the morning and 12 minutes, 13 seconds during the evening. For Kansas City, the average travel time was 11 minutes, 7 seconds during the morning and 11 minutes, 25 seconds during the evening. The average travel time for the morning rush period were both slightly higher than the same quarter last year. Both evening rush periods experienced slightly lower average travel times than the previous year. Overall, average speeds ranged between 50 mph and 56 mph.

The planning times account for unexpected delays and indicate how long customers need to plan in order to arrive on time 95 percent of the time. In St. Louis, the average 10-mile planning times were 13 minutes, 53 seconds during the morning and 18 minutes, 3 seconds during the evening. This means customers in the St. Louis evening rush needed to plan 8 minutes, 3 seconds more for a 10-mile trip than they would need in free-flow conditions. In Kansas City, the average planning times were 14 minutes, 30 seconds during the morning and 15 minutes, 32 seconds during the evening. Customers in the Kansas City evening rush needed to plan 5 minutes and 32 seconds more for a 10-mile trip than they would need in free-flow conditions. The planning times in St. Louis and Kansas City represent average rush-hour speeds between 33 and 43 mph. The planning times for morning rushes in both regions were higher than the previous year, while the planning times for evening rushes were less than the previous year.

The average travel times in both regions are higher than the target for the second quarter of 2018. The morning average travel times are 40 seconds to 1 minute, 7 seconds greater than the target, while the evening travel times are 50 secconds to 1 minute, 6 seconds greater than the target.

Individual freeway segments within the regions experienced longer travel times than the regional averages as depicted in the maps. The maps also depict rush-hour conditions on selected arterial routes compared to normal traffic flow during non-peak traffic conditions.

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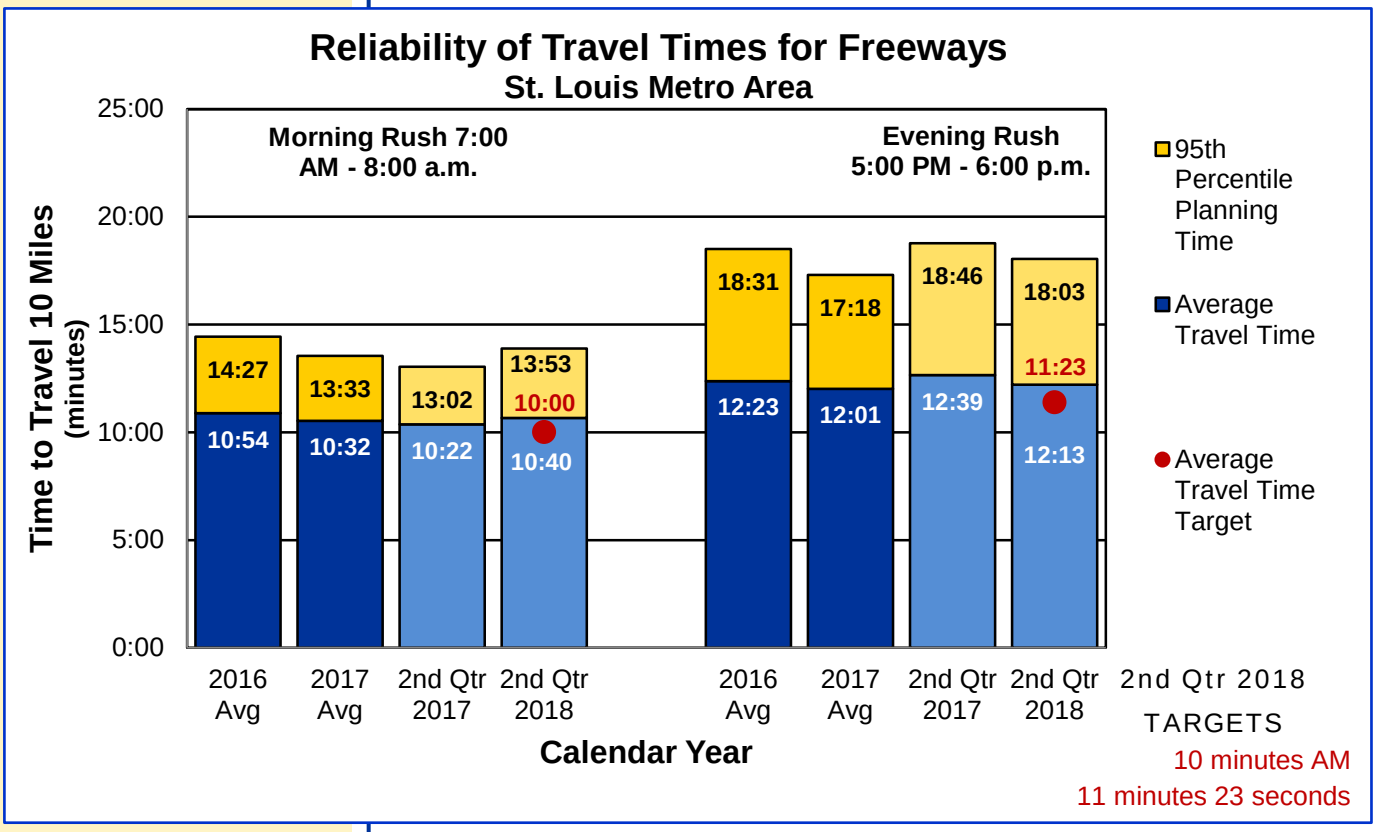
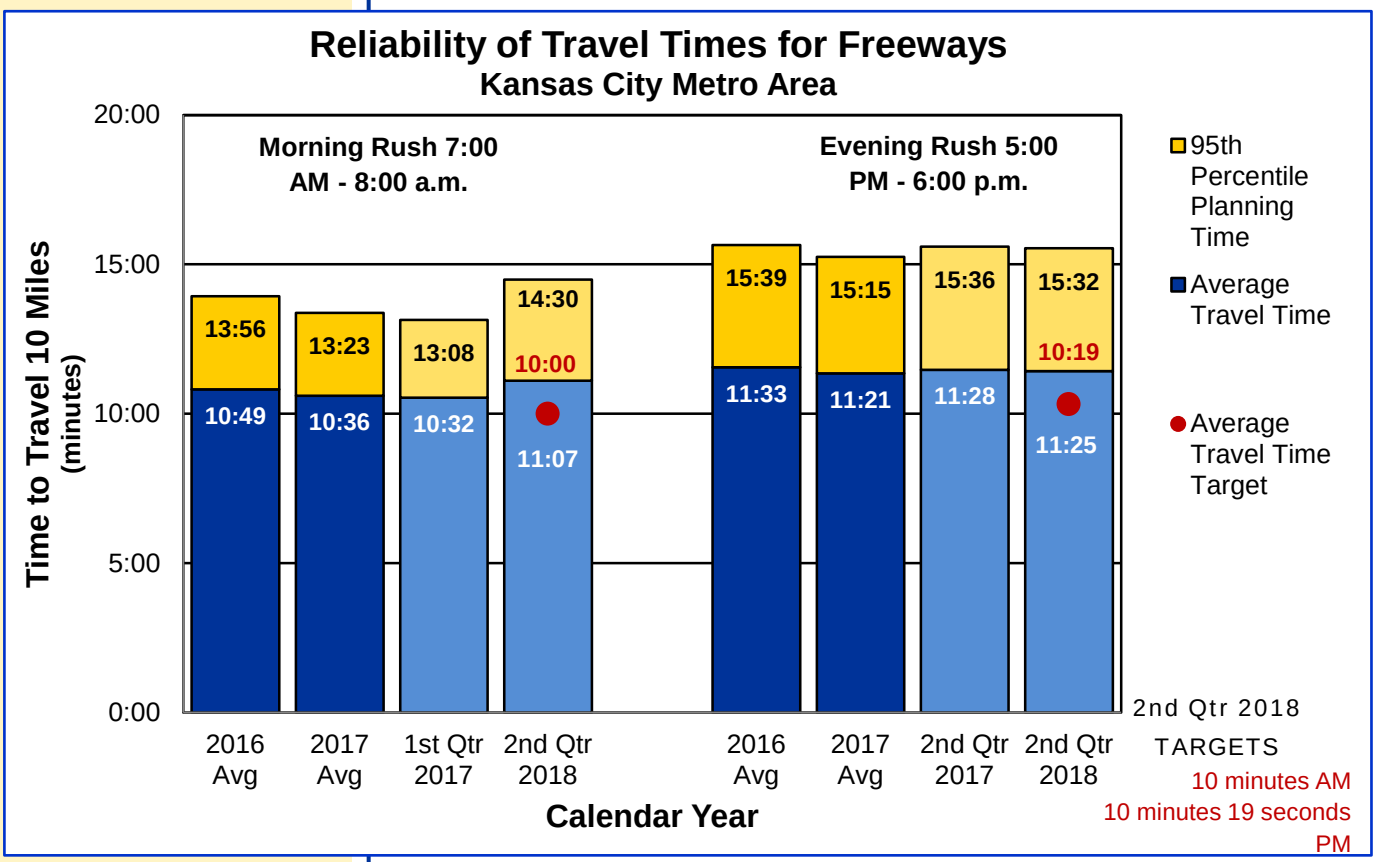
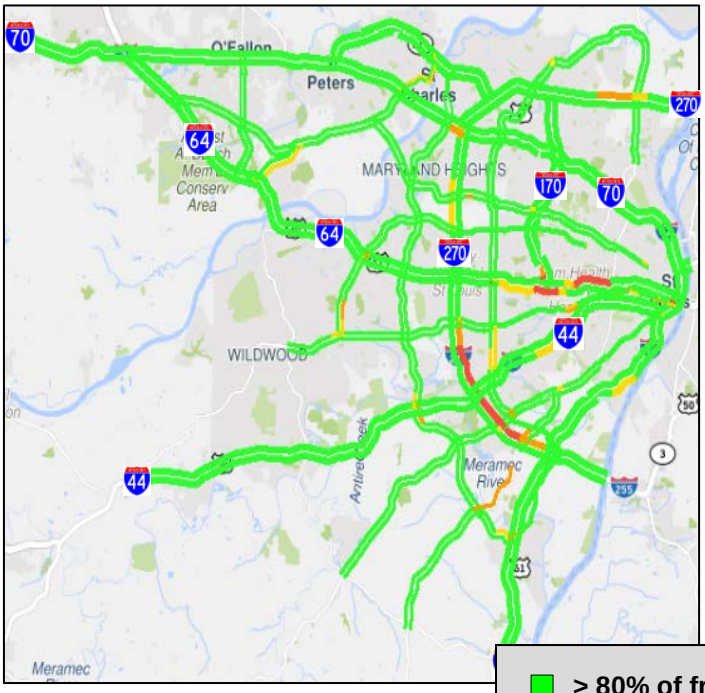
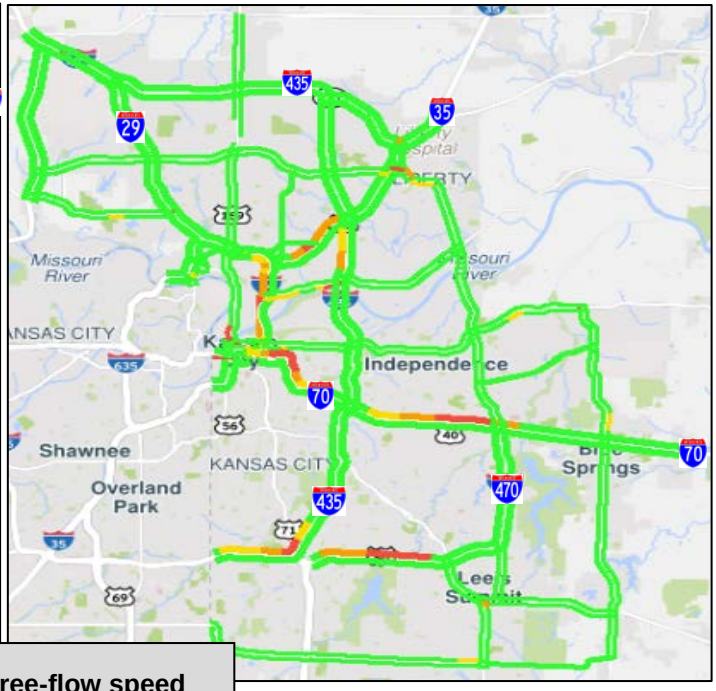




A.M. Mobility

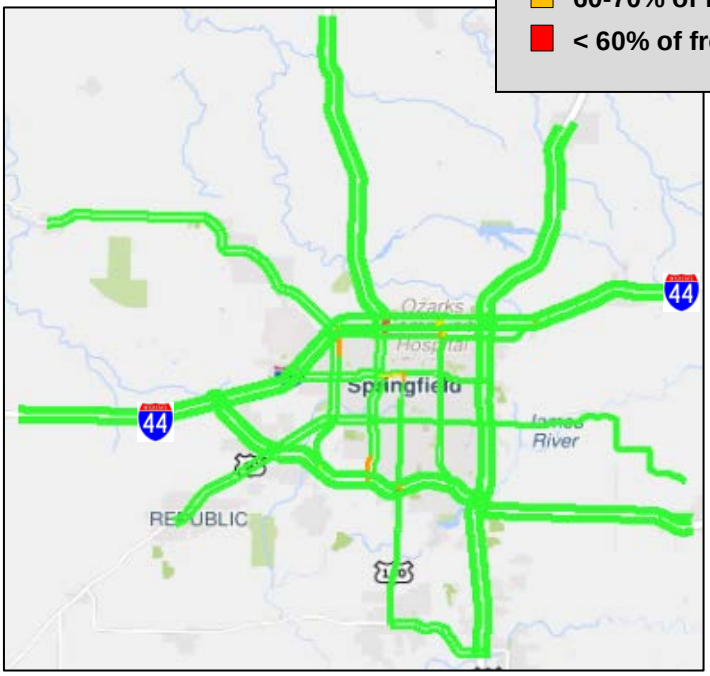


St. Louis Area

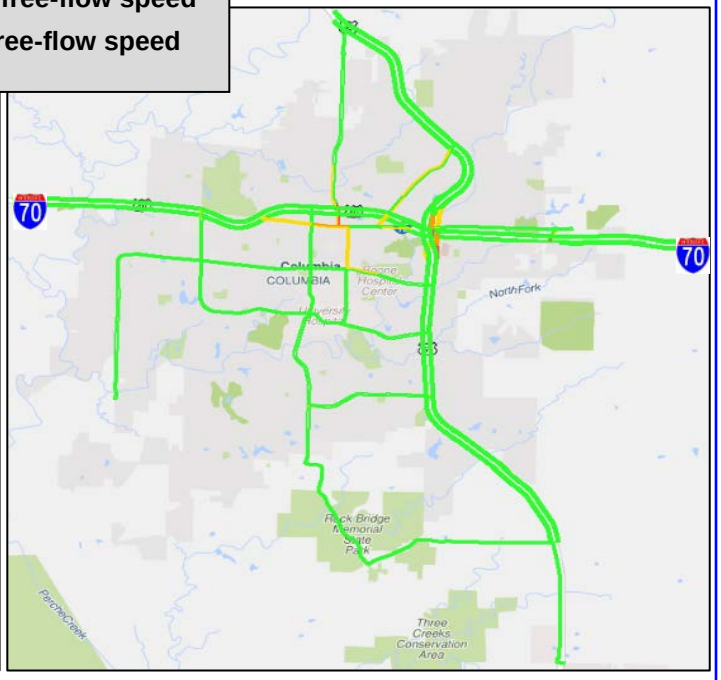


Kansas City Area

- > 80% of free-flow speed
- 70-80% of free-flow speed
- 60-70% of free-flow speed
- < 60% of free-flow speed



Springfield Area



Columbia Area

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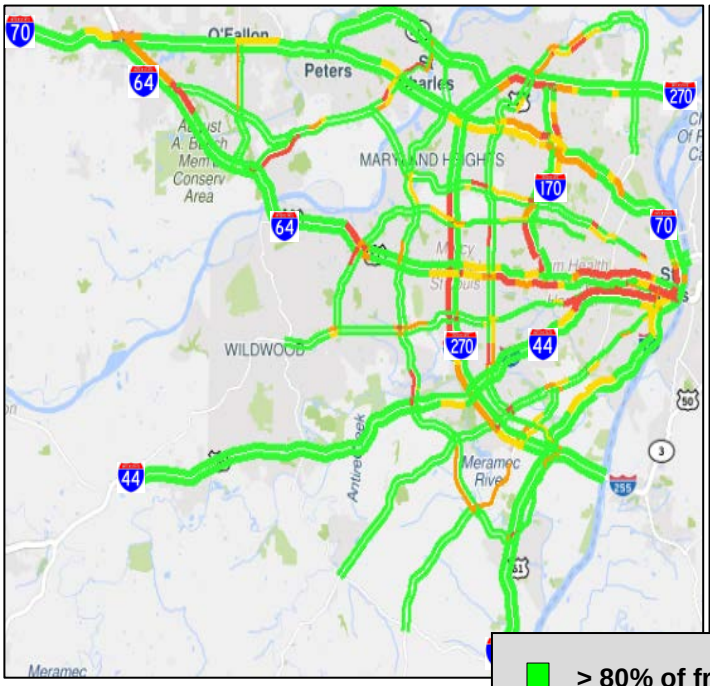
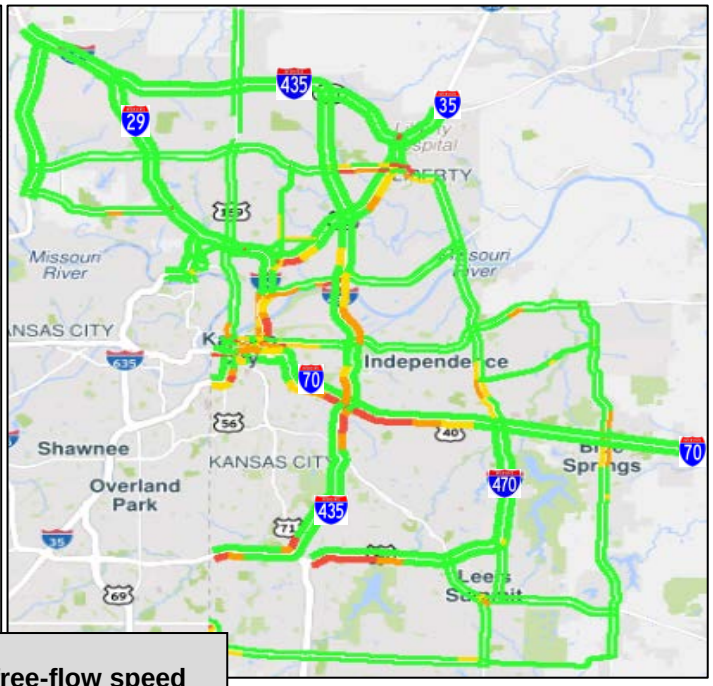
P.M. Mobility



St. Louis Area



Kansas City Area

- > 80% of free-flow speed
- 70-80% of free-flow speed
- 60-70% of free-flow speed
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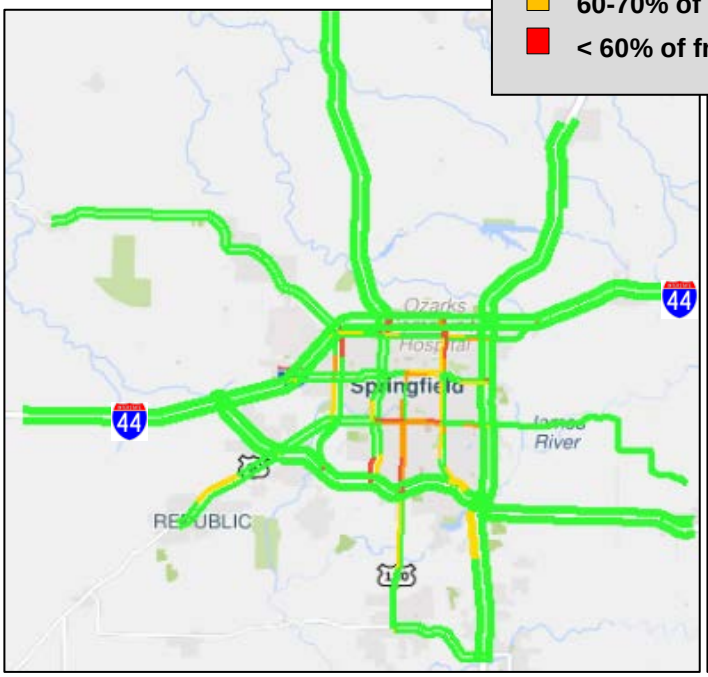
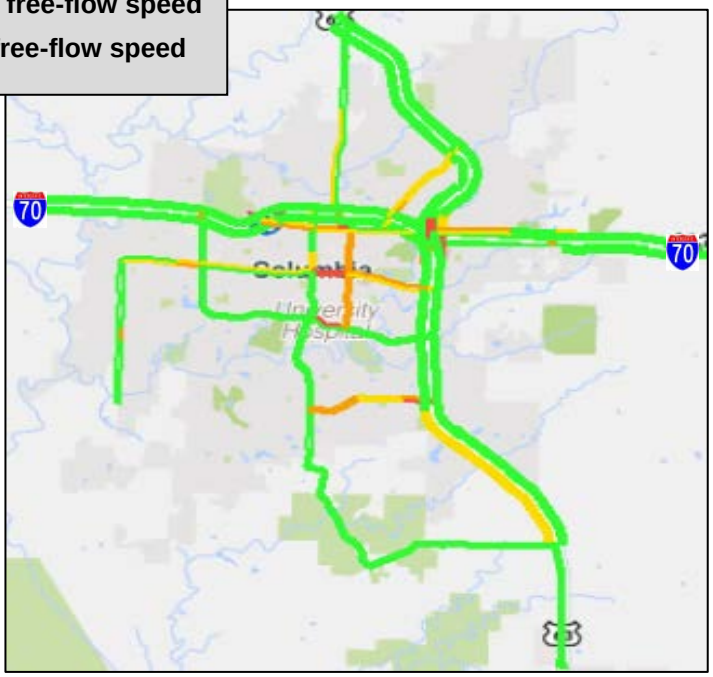


Springfield Area



Columbia Area

OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Cost and impact of traffic congestion – 5b

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Jeanne Olubogun
District Traffic Engineer

PURPOSE OF THE MEASURE:
This measure tracks the annual cost and impact of traffic congestion to motorists for motorist delay, travel time, excess fuel consumed per auto commuter and congestion cost per auto commuter.

MEASUREMENT AND DATA COLLECTION:
A reporting tool available in the Regional Integrated Transportation Information System looks at user delay costs. This data, in combination with industry standard costs for passenger cars and trucks, reflects the overall costs of congestion. RITIS also includes historic data so trend lines can be tracked and evaluated. The unit cost per passenger car is $17.67 per hour and is obtained from the Texas A&M Transportation Institute. The unit cost per truck is $68.09 obtained from the American Transportation Research Institute, which specializes in tracking freight mobility and provides the best source of data related to freight costs. For previous reporting, the department used data provided by the TTI, which annually produces the Urban Mobility Report. The target for this measure is updated annually in April and is established by projecting a 10 percent improvement over a four-year average.

Recurring congestion occurs at regular times, although the traffic jams are not necessarily consistent day-to-day. Nonrecurring congestion is an unexpected traffic crash or natural disaster that affects traffic flow. When either occurs, the time required for a given trip becomes unpredictable. This unreliability is costly for commuters and truck drivers moving goods, which results in higher prices to consumers.

While the desired trend for both costs is downward, challenges exist in Missouri's metropolitan regions to continue toward this desired outcome. A comprehensive look at congestion is needed, looking beyond typical solutions of adding capacity. Using smarter technology to help guide motorists is a must. Still, the desired outcome is lower congestion costs and an indication that traffic is moving more efficiently.

The 2017 target was $486 million. The actual calculation from the RITIS data is $568 million. This report looks at the 2014 to 2017 cost of congestion in the urban areas of Kansas City and St. Louis, as well as rural I-44 and I-70 across the state.

Congestion costs in Kansas City and St. Louis have steadily increased during this period and the volume trends have slightly decreased. Interestingly, the costs on rural I-44 and I-70 have decreased, as well as volume trends being down slightly.

Volume growth is often seen when gas prices remain low. The average cost of gasoline in April 2014 was $3.52 per gallon, while in April 2018 it was about $2.45 per gallon. Since mid-2016, while gas prices have fluctuated a bit, the price has been fairly steady.

Traffic congestion is widely viewed as a growing problem in many urban areas because the overall volume of vehicular traffic in many areas (based on VMT) continues to grow faster than the overall capacity of the transportation system. Capacity is not merely defined by roadway expansion, but also by things such as carpool efforts, transit usage increases, flexible work hours, incident clearance practices, work zone management and many other factors. Like many other state DOTs, MoDOT puts forth great effort in incident clearance practices, work zone management and other factors that impact mobility.

As a state and individual regions, a comprehensive look at all available means to reduce the cost of congestion is necessary.

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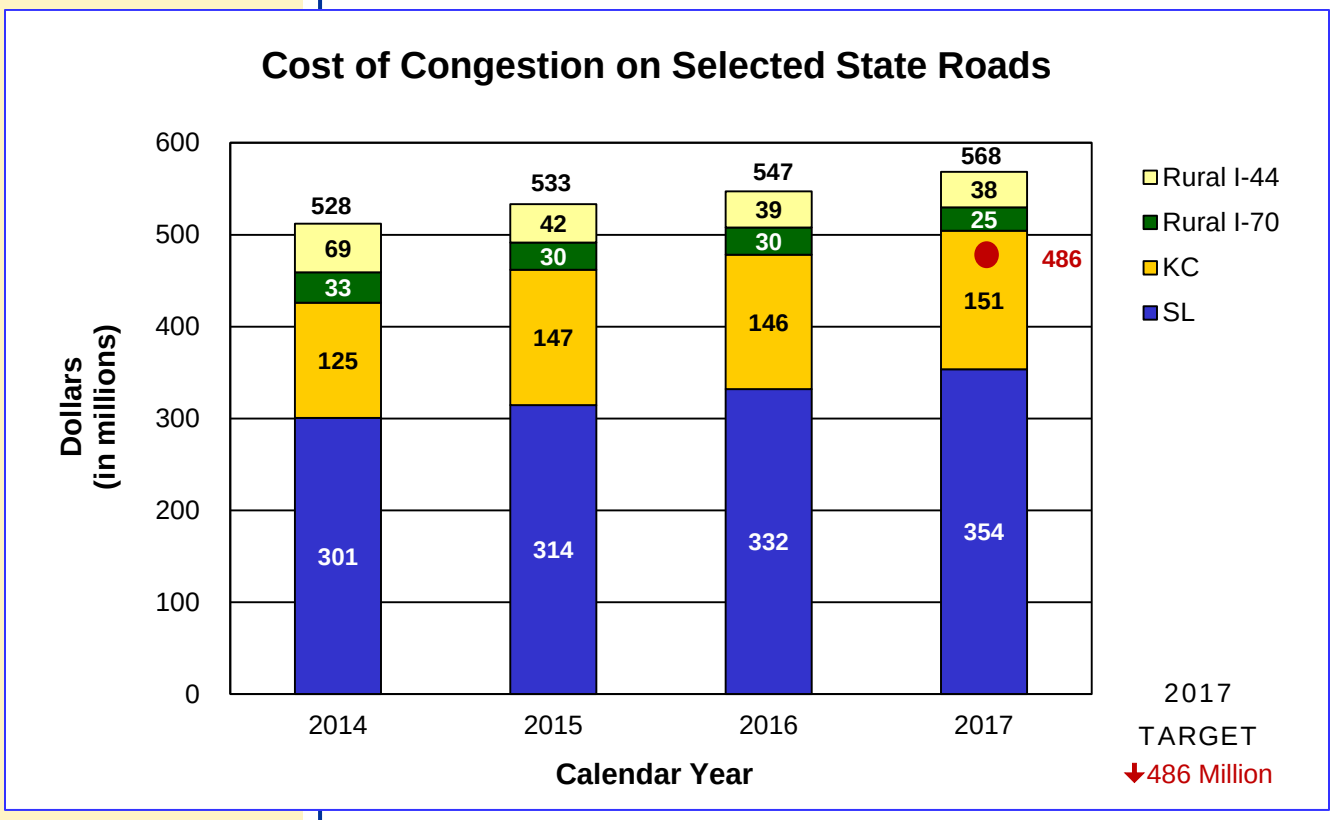

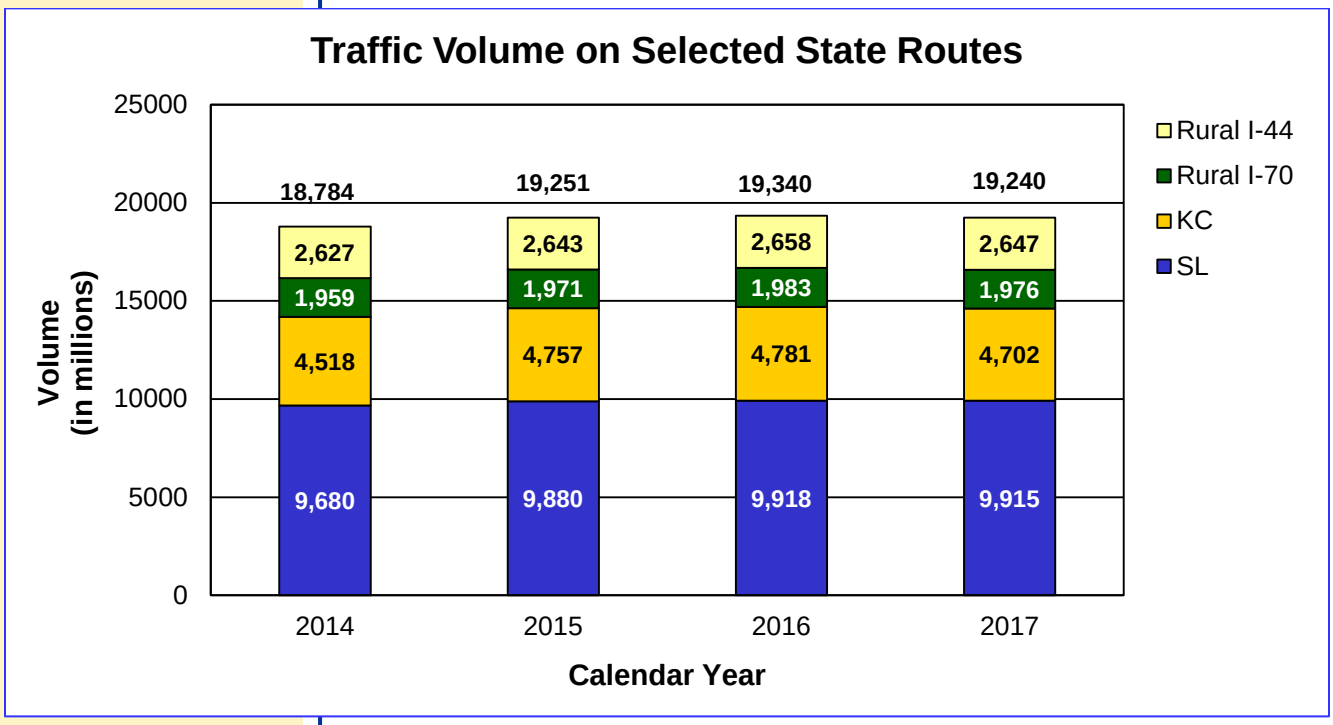

OPERATE A RELIABLE AND CONVENIENT TRANSPORTATION SYSTEM

Average time to clear traffic incident – 5c

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Randy Johnson
Traffic Center Manager

PURPOSE OF THE MEASURE:
This measure is used to determine the trends in incident clearance on the state highway system.

MEASUREMENT AND DATA COLLECTION:
Advanced transportation management systems are used by the Kansas City and St. Louis traffic management centers to record incident start time and the time when all lanes are declared cleared. Traffic incidents can be divided into three general classes of duration set forth by the Manual on Uniform Traffic Control Devices that include minor, intermediate and major. Each class has unique traffic control characteristics and needs.

This target is established by projecting a 10 percent improvement over a five-year average.

A traffic incident is an unplanned event that blocks travel lanes and temporarily reduces the number of vehicles that can travel on the road. The speed of incident clearance is essential to the highway system returning back to normal conditions. Responding to and quickly addressing the incident (crashes, debris and stalled vehicles) improves system performance.

St. Louis recorded 2,814 incidents in the second quarter of 2018. The average time to clear traffic incidents was 24.1 minutes, an increase of 2.5 percent from the second quarter of 2017.

Kansas City recorded 2,205 incidents in the second quarter of 2018. The average time to clear traffic incidents was 23.6 minutes, a decrease of 7.4 percent from the second quarter of 2017.

The second quarter for Kansas City and St. Louis revealed an array of incidents that included overturned tractor trailers, school bus, multi-vehicles and MoDOT fleet. Kansas City saw an increase in the number of incidents when compared to second quarter of 2017, while St.Louis saw a minimal decrease. Both continue to use communication, coordination and data to reduce the average time to clear. Continuous traffic incident management training has helped with quick clearance of incidents. Communication between the Traffic Management Center and Emergency Response team is vital for quick and safe responses. St. Louis had a slight increase of 2.5 percent due to several major crashes involving tractor trailers, fuel spills and pedestrian strikes. Kansas City had a reduction of 7.4 percent with significant credit again going to increased push/pulls and quicker debris removal.

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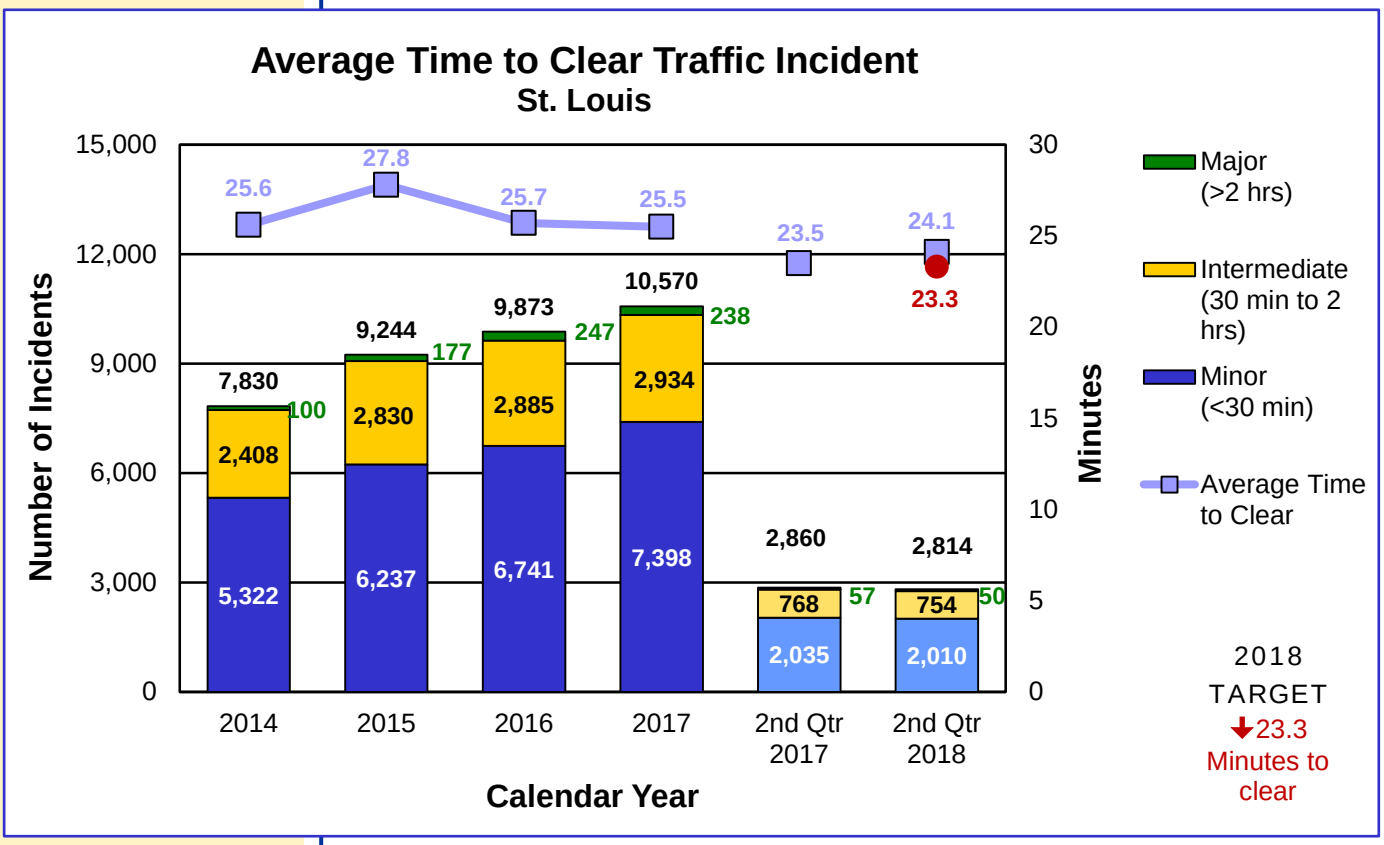

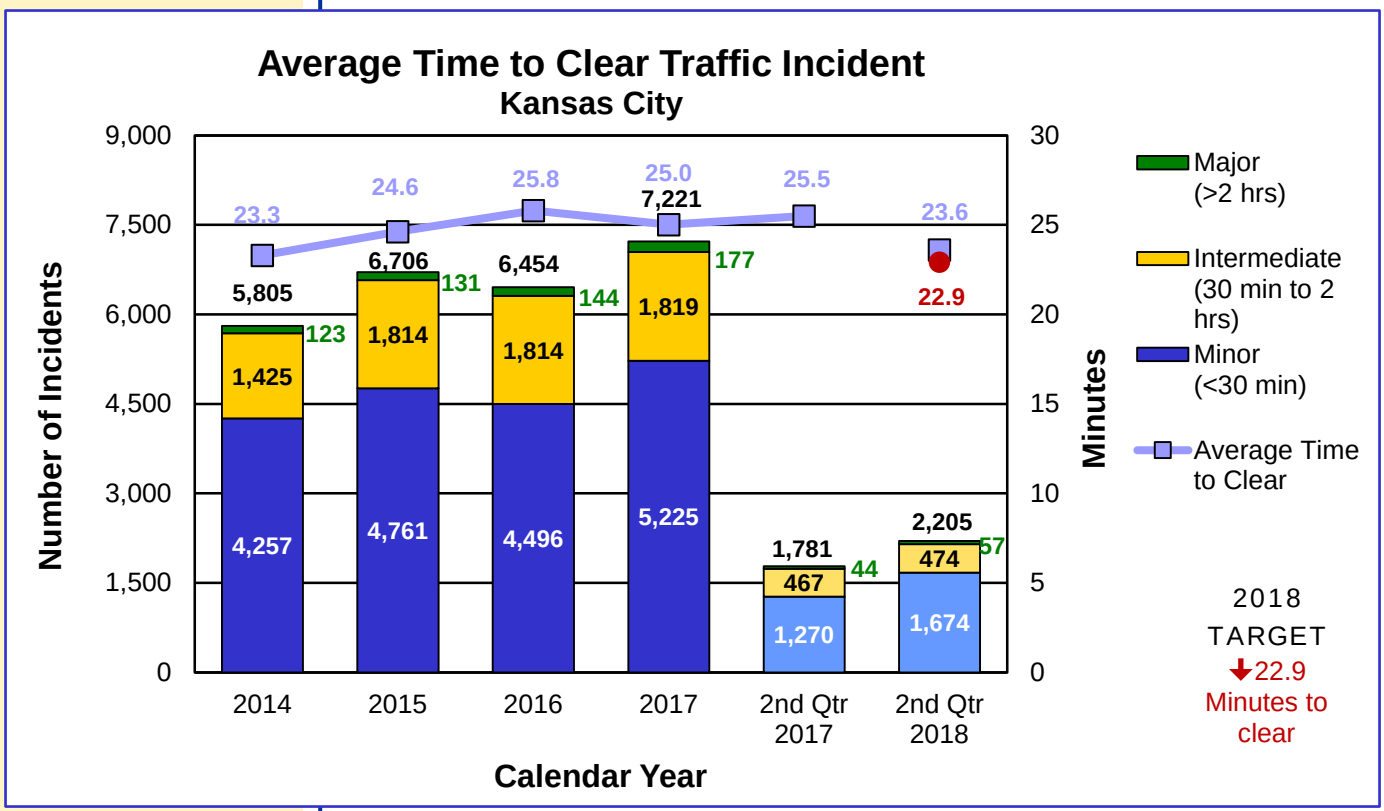

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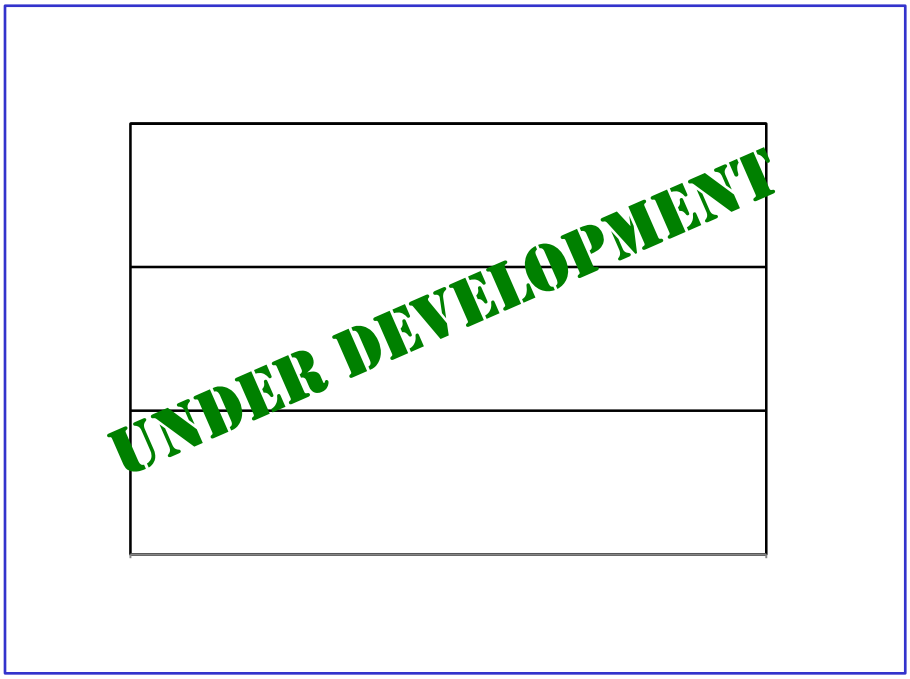
Traffic incident impacts on major interstate routes – 5d

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Laurel McKean
Assistant District Engineer

PURPOSE OF THE MEASURE:
This measure tracks the traffic incident impacts on Interstate 70 and Interstate 44 due to highway incidents.

MEASUREMENT AND DATA COLLECTION:
Interstate route closures having an actual or expected duration of 30 minutes or more are entered into MoDOT's Transportation Management System for display on the Traveler Information Map. By using the incident locations identified from the Traveler Information Map data along with the Regional Integrated Transportation Information System, real-time durations and delays for these incidents can be identified. The impact duration is the total amount of time that there was a noticeable impact on traffic speeds as a result of the incident regardless of how long the actual incident closure lasted. The maximum delay is the longest delay that an individual traveler would have experienced as a result of the incident. What is important about these measurements is that they represent the impacts that are "felt" by our customers resulting from incident closures.



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Work zone delays to the traveling public – 5e

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Troy Hughes
Design Liaison Engineer

PURPOSE OF THE MEASURE:
Work zones are designed to allow the public to travel through safely and with minimal disruptions. This measure indicates how well significant work zones perform.

MEASUREMENT AND DATA COLLECTION:
Work zone impacts are identified using automated data collection or by visual observations. An impact is defined as the additional time a work zone adds to normal travel. Impacts resulting in a delay of at least 10 minutes are included in this report.

The targeted hours of work zone congestion are based on previous years' data and an acceptable tolerance of 30 total minutes for work zone congestion statewide. The target for this measure is updated quarterly.

Motorists want to get through work zones with as little inconvenience as possible. MoDOT tries to minimize travel impacts by shifting work to nighttime hours or during times when there are fewer impacts to the traveling public. Other strategies include using technology in work zones, providing valuable information to customers and innovative uses of traffic control devices to promote efficient traffic flow. To measure the effectiveness of these strategies, MoDOT monitors the performance of work zones with the greatest potential to impact traffic each quarter. The goal is to minimize the number of times a work zone creates a traffic delay of 10 minutes or more.

During the second quarter 2018, MoDOT monitored 286 work zones, which brings the year-to-date 2018 total to 548. There were 43 instances in which traffic was delayed for at least 10 minutes. These 43 instances occurred in 18 work zones and accounted for 2,650 total minutes (44.1 hours) of congestion. Most of the congestion was experienced in four work zones: Poplar Street Bridge (I-64) and the Jefferson Barracks Bridge in the St. Louis District and two projects on I-70 in the Kansas City District. This quarter, the Poplar Street Bridge work zone was congested for a total of 3.6 hours, and the Jefferson Barracks Bridge was congested for a total of 8.3 hours. Also this quarter, the I-70 project in Lafayette County was congested for a total of 8.8 hours and the I-70 project in Jackson County was congested for a total of 8.3 hours.

An initial target for the cumulative work zone congestion statewide has been set at 180 hours for the year (45 hours per quarter). This target translates to approximately 30 minutes of work zone congestion per day statewide. Since this is a new measure, MoDOT will evaluate the identified target after the first year and adjust accordingly.

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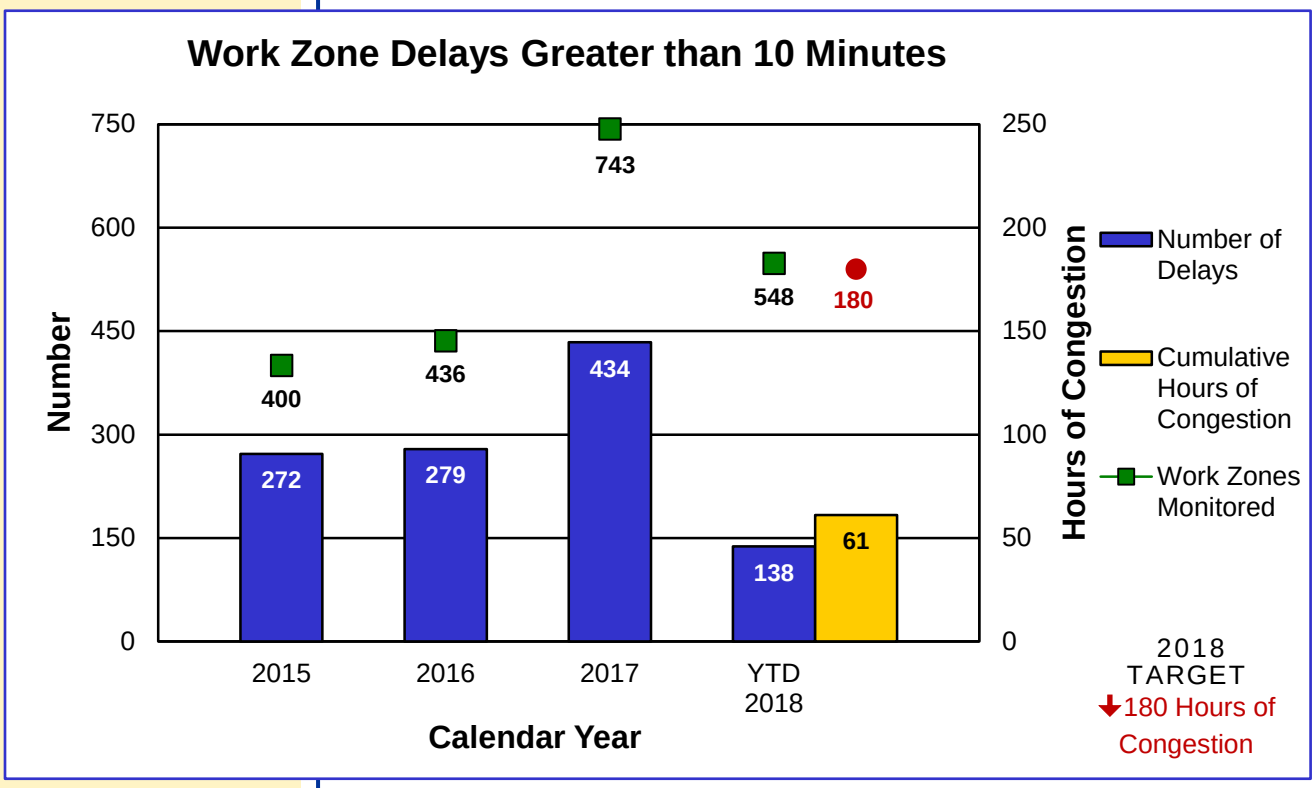

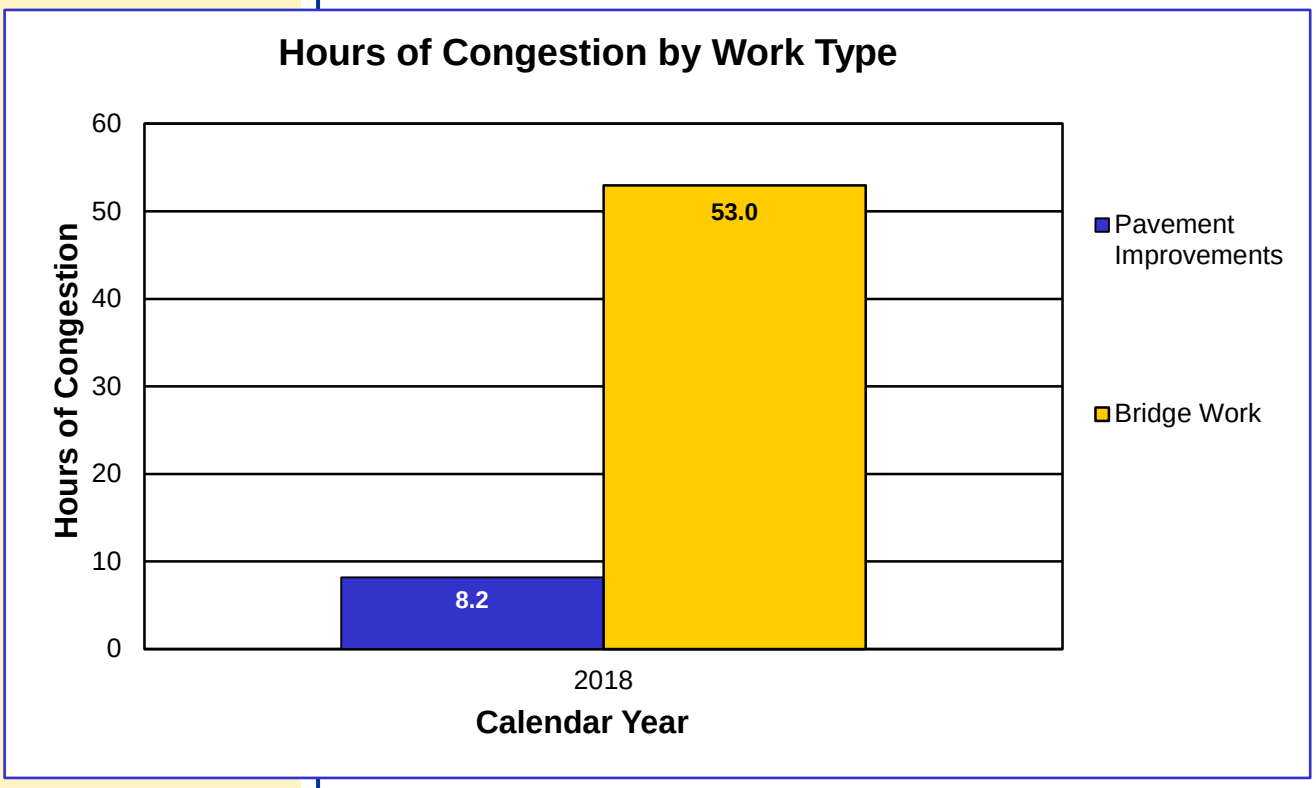

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Time to meet winter storm event performance objectives – 5f

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Arisa Prapaisilp
Assistant District Maintenance Engineer

PURPOSE OF THE MEASURE:
This measure tracks the amount of time needed to perform MoDOT's snow and ice removal efforts.

MEASUREMENT AND DATA COLLECTION:
For major highways and regionally significant routes, the objective is to restore them to a mostly clear condition as soon as possible after the storm has ended. MoDOT calls these "continuous operations" routes. State routes with lower traffic volumes should be opened to two-way traffic and treated with salt or abrasives at critical areas such as intersections, hills and curves. These are called "non-continuous operations" routes. After each winter event, maintenance personnel submit reports indicating how much time it took to meet the objectives for both route classifications.

Knowing the time it takes to clear roads after a winter storm can help the department better analyze the costs associated with that work. MoDOT's response rate to winter events provides good customer service for the traveling public while keeping costs as low as possible. In addition, one of MoDOT's Strategic Initiatives is working toward predictive analytics to optimize winter operations resources.

The 2017-2018 winter season was relatively light in accumulation of snow and ice, but was still challenging. Most of the winter events were freezing rain and ice events requiring significant treatment which was costly. Responding to the high number of freezing rain and ice events resulted in the average time of 3.9 hours to meet MoDOT's objective for continuous operations routes, and 4.5 hours for non-continuous routes. These response times are consistant with response times from previous winters and this winter should result in typical expenditure levels.

On average, winter operations, cost about $45 million per year. MoDOT expended $42.6 million for the 2017-2018 winter season. This was slightly less than average, due to the lighter accumulating, although still challenging winter events.

Division and district maintenance leadership has held meetings on regional and statewide levels to investigate the development of possibly two new performance measures for winter operations. One is based on direct MoDOT costs associated with the winter events and the other is based on indirect costs or impacts from congestion during winter events using the Regional Integrated Transportation Information System or RITIS. Proposals for these new measures are currently under development.

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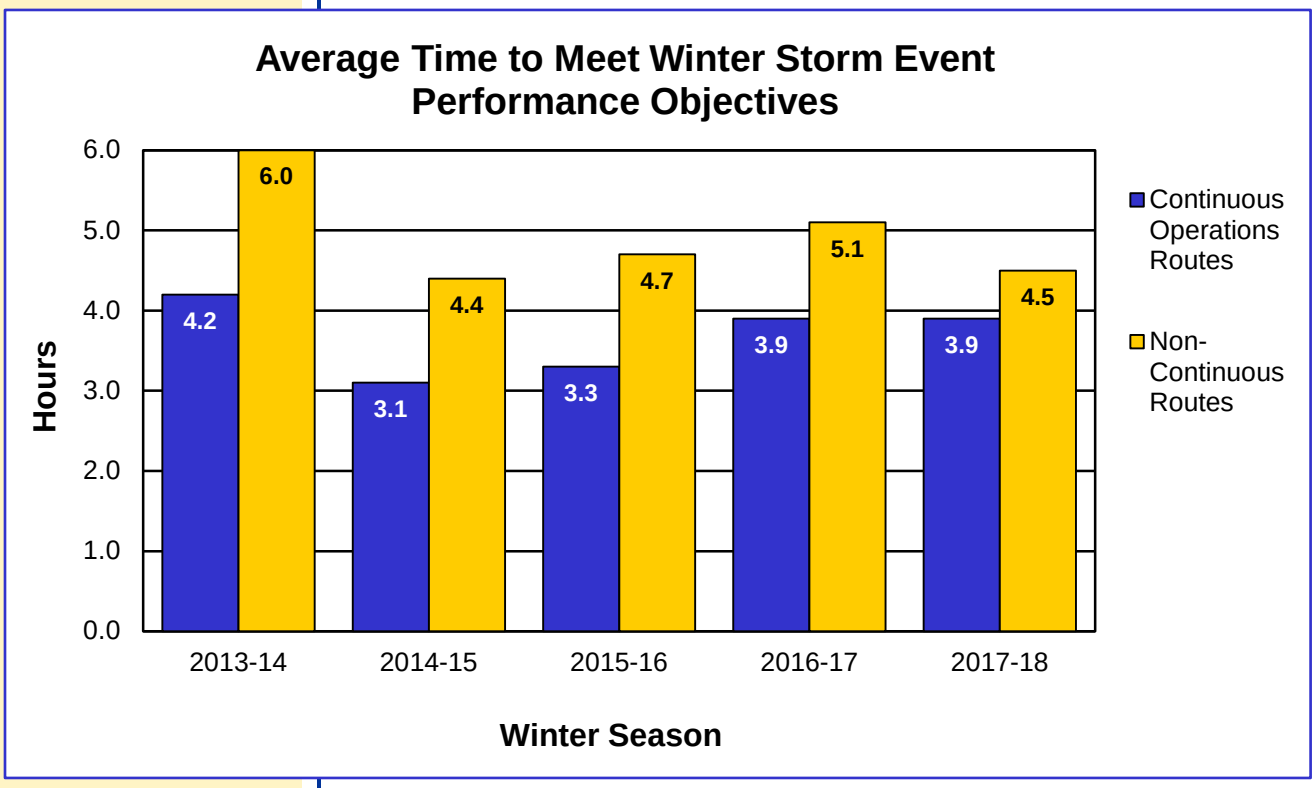

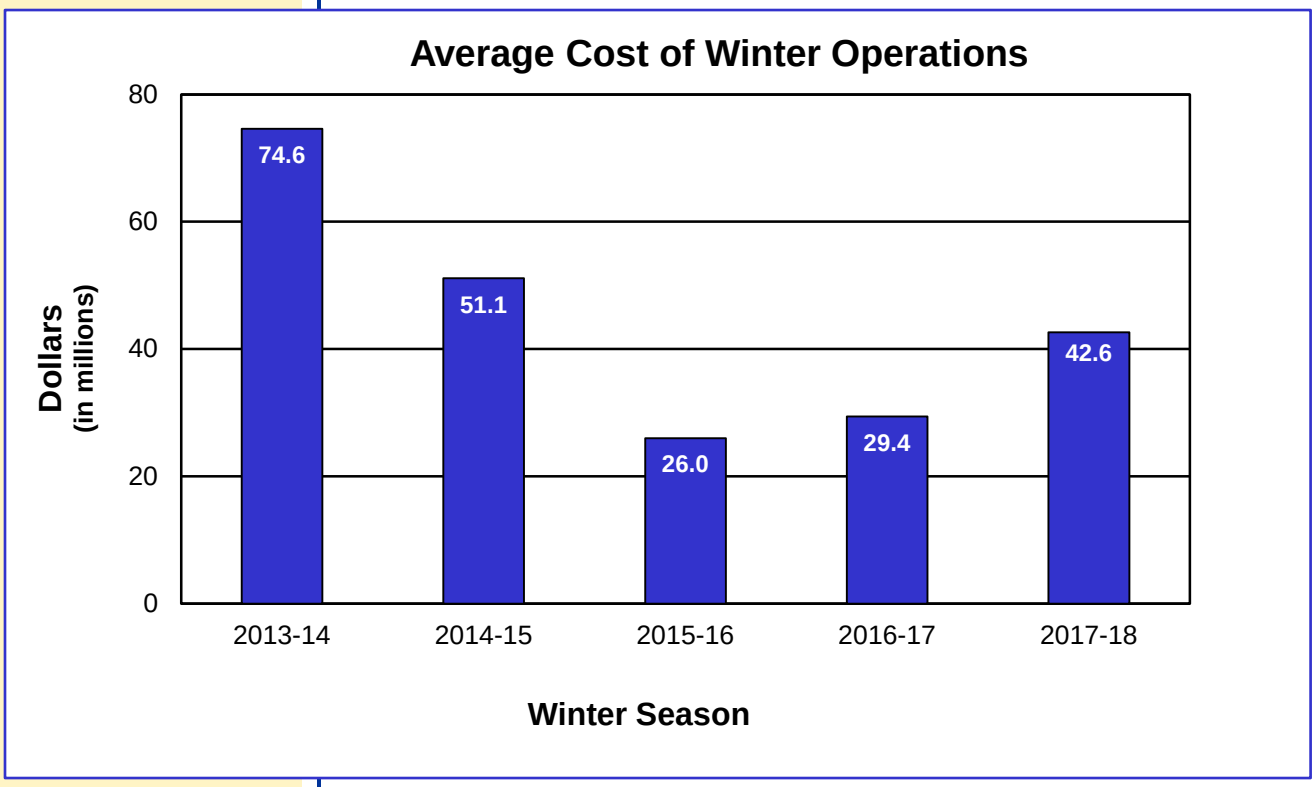

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Bike/pedestrian and ADA transition plan improvements – 5g

RESULT DRIVER:
Becky Allmeroth
State Maintenance Engineer

MEASUREMENT DRIVER:
Ron Effland
Non-Motorized Transportation Engineer

PURPOSE OF THE MEASURE:
This measure tracks MoDOT's investment in pedestrian facilities and progress toward removing barriers. Accessibility needs occur within the right of way, such as sidewalks and traffic signals. Removal of the barriers listed in MoDOT's 2010 ADA Transition Plan is required as part of the department's compliance with the Americans with Disabilities Act.

MEASUREMENT AND DATA COLLECTION:
MoDOT's investment in pedestrian facilities is determined from the awarded contract amounts for the 20 most common construction elements used on pedestrian projects each year.
ADA Transition Plan progress is based upon completed work that has corrected defective items reported in the ADA Transition Plan inventory. The dollar amounts are based on unadjusted estimates from 2008 and will not reflect actual expenditures. This avoids impacts from inflation or changing field conditions.
A progress target line is included to show where MoDOT's progress should be in order to fully complete the ADA Transition Plan by 2027. Annual funding levels necessary to complete the ADA Transition Plan by 2027 determine the target, which is set in April of each year.

MoDOT has improved more than $28.5 million of deficient Americans with Disabilities Act facilities in the right of way since 2008. However, additional work totaling more than $122.8 million of the 2010 ADA Transition Plan inventory needs to be completed before August 2027. To meet the commitment of the Missouri Highways and Transportation Commission, MoDOT needs to complete more than $12.2 million in improvements each year until 2027.

Since fiscal year 2016, the MHTC has retained half of the Transportation Alternatives Program funding it receives to be used toward MoDOT's Americans With Disabilities Act Transition Plan activities. The 2018 STIP estimates the annual TAP funds retained for MoDOT ADA projects at approximately $8.6 million per year. Additional investments are required to complete the ADA Transition Plan by August 2027.

So far in 2018, MoDOT has completed $1.3 million in ADA improvements in two districts. In 2017, MoDOT completed a total of $3.51 million in ADA improvements. These amounts are well below the annual pace needed to complete the required ADA improvements by 2027. Current reporting of Transition Plan Completion at 18.8 percent complete is significantly behind the 46.1 percent target for the second quarter of 2018. Only three districts reported any ADA Transition Plan progress this quarter: Central, St. Louis and Southwest.

In the first half of 2018, MoDOT invested $7.89 million toward improvements in pedestrian facilities. In the second quarter of 2018, MoDOT has utilized 1.63 percent of the 2018 STIP award – a substancial increase over the record low rate of 0.72 percent posted in 2017. In all of 2017, MoDOT invested a total of $5.38 million in pedestrian facility improvements.

The annual investment target for this measure has been set at $15 million. A significant increase in ADA Transition Plan progress is necessary for MoDOT to be able to complete the ADA Transition Plan by August 2027.

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