
PERFORMANCE MEASURES

Under the previous transportation act Moving Ahead for Progress in the 21st Century (MAP-21) and the current transportation act Fixing America's Surface Transportation Act (FAST Act), the development of the national transportation infrastructure moved from a policy and programmatic framework to a multimodal performance and outcome based program. In this new framework, states incorporate performance based measures, goals and targets into their planning processes in project selection and implementation. Specifically, states were mandated to invest in projects that achieve individual targets developed during MAP-21 and enacted under FAST Act that help the nation move towards the achievement of national goals.

While this is a new direction at a national level, KDOT has used a data driven, performance-based approach for many years. KDOT's performance management information may be viewed at the following link <https://kdotapp.ksdot.org/perfmeasures/>. The new federal performance measures and correlating targets will be added to this website in phases as they are established. State measures that are determined to be sufficiently different from the federal measures will continue to be maintained. The federal performance measures are identified with an asterisk

(*) following the measure name and are displayed alongside the KDOT measures when present.

—FEDERAL PERFORMANCE GOALS & MEASURES—

The seven national performance goals established under MAP-21 for the Federal highway program are:

- 1) Safety- to significantly reduce traffic fatality and serious injury accidents on public roads
- 2) Highway Infrastructure Condition- to maintain the highway system already in place in good repair
- 3) Congestion Reduction- to achieve significant reduction in congestion on the National Highway system
- 4) System Reliability- to improve the efficiency of the surface transportation system
- 5) Freight Movement and Economic Vitality - to improve the National Highway Freight Network, strengthen rural communities access to national and international economic markets and to support regional economic development
- 6) Environmental Sustainability- to protect and sustain the natural environment while improving transportation system performance

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- 7) Reduction in Delays in Project Completion - to reduce delays in project development and delivery processes; thereby, expediting the movement of people and goods

To achieve these goals the Federal Highway Administration (FHWA) and Federal Transit Association (FTA) in cooperation with the states embarked on a lengthy rulemaking process to identify specific measures related to the seven performance goals. Thus far, measures have not been established for goals six and seven. The measures established related to highway transportation in 49 USC 625 and 23 CFR 490 are:

Safety:

- Number of Fatalities (FARS)
- Fatalities per 100 million vehicle miles travelled (KCARS)
- Number of Disabling injuries (KCARS/FHWA)
- Disabling injuries per 100 million vehicle miles travelled (FARS/FHWA)
- Non-Motorized Fatalities and Disabling Injuries (FARS/KCARS)

Infrastructure:

- Percentage of Interstate Pavements rated as **Good** Condition
- Percentage of Interstate Pavements rated as **Poor** Condition
- Percentage of Non-Interstate NHS Pavements rated as **Good** Condition
- Percentage of Non-Interstate NHS Pavements rated as **Poor** Condition

- Percentage of NHS bridges (by decking) rated as **Good** Condition
- Percentage of NHS bridges (by decking) rated as **Poor** Condition

Congestion Reduction:

- Peak Hour Excessive Delay (PHED) Measure: the annual hours of PHED per capita
- Non-Single Occupancy Vehicle (SOV) Travel Measure: Percent of SOV travel
- Emissions Measure: Total emissions reductions
- Percentage Change in Tailpipe CO2 Emissions on the NHS compared to the Base Year (2017) Levels

Currently, Kansas is not required to participate in this measure as there are no regions in the state that are designated as non-attainment.

System Reliability- NHS Interstate Performance, Non-NHS Interstate Performance & Freight Movement:

(The System Reliability measures are a combination of performance goals four and five.)

- Interstate Travel Time Reliability Measure (TTRM): the percent of person- miles traveled on the Interstate that are reliable
- Non-Interstate Travel Time Reliability Measure (NTTRM): the percent of person-miles traveled on the Non- Interstate NHS that are reliable
- Interstate Freight Reliability Measure: Truck Travel Time Reliability (TTTR) Index

Concurrently with the FHWA performance measure process, the Federal Transit Administration (FTA), went through a similar process and established performance measures and targets related to transit. The transit performance measure implementation schedule is not the same as the performance measure schedule for FHWA. When the transit performance measure information is required by FTA to be in the STIP, the information will be added and will be reported in the Transit section.

—FEDERAL PERFORMANCE TARGETS—

After the Federal performance goals and national measures were established, Kansas gathered initial data for:

- Interstate and National Highway System (NHS) pavement conditions,
- bridge conditions,
- fatality and injury accident rates,
- traffic congestion and
- freight movement.

From this initial set of data, Kansas is setting performance targets to support the federal measures previously identified. While final performance targets have not been established for all the performance measures, the targets related to Safety are in place and those related to Infrastructure and System Reliability are expected to be in place no later than Spring of 2019. As the remaining targets are established, they will be added to this discussion.

-SAFETY-

The first federal performance measures and state targets required to be in place under FAST are those pertaining to safety and the prevention of serious injury and fatality accidents. Safety has long been a priority for KDOT and is one of the three key principles identified in the Kansas Long Range Transportation Plan (LRTP). Furthermore, the purpose of the Modernization Program, a core KDOT program outlined in the Project Selection of this STIP, is safety through improvement of roadways and/ or structures. While the Kansas LRTP provides the broad framework for the direction and priority of the agency, several additional state plans and programs augment the LRTP by providing focus and detail for executing the objectives outlined in the LRTP. Specifically, the Strategic Highway Safety Plan (SHSP), the Highway Safety Plan (HSP) and the Highway Safety Improvement Program (HSIP) contribute substantively to KDOT's achievement of the goal of safety. Together, these three planning tools enable KDOT to manage and implement a statewide safety strategy.

According to the FHWA Office of Safety, "a Strategic Highway Safety Plan (SHSP) is a major component and requirement of the Highway Safety Improvement Program (HSIP) (23 U.S.C. § 148)". The Kansas Strategic Highway Safety Plan (SHSP) is a statewide-coordinated plan that provides a comprehensive approach to reducing highway fatalities

and serious injuries on all public roads. This five-year planning level document identifies the state's key safety needs and guides investment decisions towards strategies and countermeasures with the most potential to save lives and prevent injuries. The SHSP also influences KDOT policy and research and contributes to activities of partner agencies. The SHSP is championed by a multi-agency Executive Safety Council, developed by a cross-section of diverse and talented individuals and support teams, and is designed to drive KDOT's HSIP and HSP programs.

Specifically, projects in the STIP list of projects (Appendix B) address the infrastructure goals from the SHSP of increased intersection safety and lowered incidence of roadway departures. Projects in the STIP listing related to intersection safety may be recognized by the HSIP fund category and the HAZ/HES subcategories referenced in the project information section. Projects developed to address roadway departures are those projects with the HSIP fund category and subcategories LTG, SOS and PMR. (KDOT uses a Parent-Child project approach for these subcategories which means one project is developed for the STIP that covers the total anticipated obligation effort anticipated for each STIP year for the three subcategories. Then as individual projects are developed, they are tied to the Parent project listed in the STIP. This is done to enable a better representation of the expected obligations for this effort in the STIP as projects in these subcategories are developed in an ongoing pattern as need dictates over an entire

year which does not correlate to the STIP development period. KDOT's current SHSP document may be viewed online at <http://www.ksdot.org/bureaus/burTrafficSaf/reports/kshsPlan2015.asp>.

The second plan, the Highway Safety Plan (HSP)-link (<http://www.ksdot.org/Assets/wwwksdotorg/bureaus/burTrafficSaf/reports/HSP2017.pdf>) - is a one-year project level document that describes the processes followed by the state of Kansas in the use of federal highway behavioral safety funds, consistent with the guidelines, the priority areas, and other requirements established under Section 402, 405, 408, 410 and 1906 of federal code. This plan and associated funding are under the jurisdiction of the National Highway Traffic Safety Administration (NHTSA). Each year, based on this detailed problem and solution oriented plan, a program is developed and projects are created that focus on the issues identified. The plan and associated program of projects developed are intended to influence human behavior by identifying highway safety-related problems and implementing effective educational and enforcement programs focusing on prevention. Although the projects developed from the HSP are not part of the core program and, the STIP document, the effort from the HSP and its program of projects are a major contributor to achieving safety in Kansas. Monetarily for 2018 Kansas has about \$8.5M in planned project obligations for the HSP.

The third tool that KDOT uses in its effort to improve highway-related

safety is the Highway Safety Improvement Program (HSIP). A foundation of the HSIP is the direct link between the data-driven priorities established in the SHSP and the identification, development, and implementation of the HSIP projects. Projects in the HSIP are funded with HSIP funding, a core Federal-aid fund program (discussed in the Program Financing section of this document). In Kansas HSIP dollars are spent in a variety of independently managed sub-programs that are denoted by subcategories. Subcategories are groups of projects that have similar characteristics of funding type or work type. (For an in-depth discussion of the four core KDOT programs and associated subcategories refer to the Project Selection Criteria section of this document.) The KDOT subcategories that use HSIP funding are:

- HES/HAZ- intersections and other safety projects on or off the National Highway System (NHS),
- SOS- highway signing,
- PMR- pavement markings,
- LTG- highway lighting,
- RXR/RRX-rail crossing protection on and off the NHS,
- RES- local construction KDOT administered (only projects specific to the High Risk Rural Roads) and
- GSI-general safety improvements.

Additionally, these remaining Modernization program subcategories, while generally state funded only, center on safety

and include:

- IRS-surfacing with improvements and practical design,
- COR-corridor management,
- IRI-interstate roadway geometric improvements,
- KCC- Railroad Crossing (KCC),
- MPR-miscellaneous modernization and
- RIM-non-interstate geometric improvements.

Collectively, these subcategories cover all 140,000 centerline miles of public roads in Kansas while applying a multitude of proven countermeasures designed to reduce fatal and serious injury crashes statewide. Combined, the subcategories directly related to safety compose one-third of the subcategories that make-up KDOT core programs.).

The highway-related safety projects in the HSIP program and federally-funded safety projects in the Modernization program are approved and implemented via the STIP process. Projects in Appendix B of this STIP that are safety related may be identified by the fund category of HSIP in the project information. The projects so denoted in Appendix B support KDOT's effort outlined in our SHSP and HSP to meet the federal safety performance measures. Safety projects developed after the STIP preparation period will be amended to this STIP using the amendment procedures in place. For 2018 Kansas has about \$19M in apportionment for HSIP safety projects and has

approximately \$21M in estimated obligations (planned projects). Carry-over apportionment from prior years will provide the necessary funding for the difference in anticipated 2018 obligation and available apportionment. For more information about funding refer to the Federal funding section of the Program Financing narrative of this document. Additionally, for information about the most recent actual HSIP obligations (projects let and under-way), refer to the current Kansas HSIP at <http://www.ksdot.org/bureaus/burTrafficSaf/reports/kshs.asp>. Monetarily in SFY 2018 the total anticipated modernization dollar expenditure is \$33M. (Modernization expenditure cited is from the January 2018 Cash-Flow located in the Program Finance Section of this document.)

The SHSP, HSIP and the HSP all utilize the same performance measures and targets and thus provide continuity of goals. While the HSP projects concentrate on changing behaviors, the SHSP and HSIP focus on the physical improvement of Kansas roads or bridges to enhance their safety. These planning tools work together to reduce roadway serious injury and fatalities and to make the roads and bridges in Kansas safer.

The final aspect of safety in Kansas is the coordination between KDOT, local public authorities (LPAs) and metropolitan planning organizations (MPOs) that ensures a unified approach to safety across the state. This coordination of effort is vital to the statewide success in achieving the goals and objectives of the

federal performance measures. Input from both LPAs and MPOs help guide program decisions and project selections. Together, KDOT, LPAs and MPOs continue to contribute and support the goals established in the safety plans and subsequently encourage development of safety projects that help meet established safety performance targets.

Based on the data gathered in 2016, Kansas has set safety targets for each of the new federal safety performance measures and are presented in the table below. Although the targets for the measures are now in place, first year actual data (collected on a calendar year basis) will not be available until summer 2019. For more information about the safety measures and targets visit KDOT’s Performance Measure web page (link provided in the second paragraph of this discussion).

Federal Safety Performance Measures— (Data was not reported in 2017 during the transition to the new federal performance measures.); *– 2018 actual data is anticipated to be available in summer 2019.		
Measure	2018 Targets	2018 Actuals
Number of Fatalities	364	*
Fatalities per 100 million Vehicle Miles Travelled	1.16	*
Number of Disabling Injuries	1190	*
Disabling Injuries per 100 million Vehicle Miles Travelled	3.774	*
Non-Motorized Fatalities and Disabling Injuries	138	*

—STATE PERFORMANCE MEASURES & TARGETS—

Prior to the performance measure initiative undertaken at the federal level, KDOT had developed and implemented over the span of several years a data driven and performance minded process. As part of this process, KDOT established several performance measures to ensure that the practices and expenditures in place for agency business are efficient, improve accountability with the public and ensure that our actions undertaken are sufficient to meet our transportation needs. The performance measures that KDOT established covered many business aspects of the agency beyond the core construction program (the focus of the federal performance measures), and many of these KDOT measures will continue to be tracked and reported in conjunction with the federal performance measures.

-REGULAR MAINTENANCE-

The state performance measure for operation activities is one of the measures that KDOT will continue to track. KDOT has used a level of service measure for many years to monitor the operation activities of Regular (formerly termed routine) Maintenance. The operations regular maintenance performance measure coupled with roadside mowing and snow and ice guidance ensure that the expenditures in place for these activities are sufficient to meet the need. The Maintenance Quality Assurance (MQA) Program, the Managing Kansas' Roadside (MKR)

guidelines for mowing and Managing Snow & Ice (MS&I) guidance are initiatives that measure the value of the maintenance effort and ensure that routine maintenance is being performed at adequate levels. Of these three initiatives used by KDOT to monitor routine maintenance, only the MQA is quantitative in nature and included on the Performance Measure website.

The MQA program is a management tool that assists managers in prioritizing maintenance projects and resources (personnel, equipment, and materials) and determining the corresponding funding needs. The program involves an annual physical inspection of randomly selected 0.1-mile sample segments using identified Level of Service (LOS) criteria (desired maintenance conditions) for various highway rating elements in the following maintenance categories:

- 1) Travelway- the portion of the roadway for the movement of vehicles;
- 2) Traffic Guidance-all KDOT maintained signs, pavement markings, striping or anything used to regulate, warn or guide traffic;
- 3) Shoulders-areas of consideration are joint separation, cracking, drop-off or build-up and vegetation;
- 4) Drainage- areas of focus include curb and gutter, ditches, erosion control, culverts and pipes; and
- 5) Roadside-with areas of focus that include fencing, litter, vegetation control, erosion and side roads and entrances.

Based upon KDOT staff expertise and public input from surveys and correspondence, statewide and district-wide target Level of Service (LOS) values were established for both maintenance categories (travelway, shoulders, roadside, drainage, and traffic guidance) and for the individual rating elements comprising these maintenance categories. These targets are reviewed periodically and adjusted as needed. The data from the inspections are compiled into the LOS reports. These reports provide information about the Kansas highway system at the State, District, Area and Subarea levels. From these reports, KDOT staff make determinations about what areas need increased maintenance efforts or if additional funding should be requested in the next budget for additional equipment or materials to meet the ongoing maintenance effort. In SFY 2017, KDOT's monetary investment in regular maintenance activities was \$118M. (Dollar figure is the expenditure for Regular Maintenance from the August 2017 Cash-Flow. A link to view this Cash-Flow is provided in the federal safety section of this narrative.) For information about what comprises regular maintenance refer to the Program Financing section of this STIP.

In state fiscal year (SFY) 2016, the statewide LOS rating was 88.7 which is the average of the state ratings in each of the five maintenance categories. (This rating does not denote that all districts-areas-subareas had this rating nor that all segments monitored met their target LOS but merely that the overall rating for the state is a level of service of 88.7.) Further

information about Statewide MQA ratings may be obtained on KDOT's performance measure webpage (link provided in the second paragraph of this discussion).

The second resource that KDOT uses to monitor routine maintenance is the Managing Kansas' Roadsides (MKR) program. KDOT successfully maintains more than 150,000 acres of highway right-of-way using a flexible approach that adjusts to the needs of differing areas. The MKR program is a responsive program that uses different mowing approaches to achieve greater mowing efficiency. The reduction in mowing accidents has reduced KDOT employee injury and time away from duties. Additionally, this modified approach to mowing benefits our environment and wildlife by reducing roadside erosion and increasing necessary cover. For more information about KDOT's roadside management, refer to the following web page <https://www.ksdot.org/bureaus/burConsMain/Connections/roadside/roadside.asp>.

The Managing Snow and Ice (MS&I) guidance is the third initiative used in monitoring routine maintenance activities. MS&I is used to manage the 10,000 miles of Kansas Highways during snow and ice events. To use resources effectively and efficiently, KDOT bases road treatment on the number of vehicles that travel a road daily. The three categories are: 1) Roads with > than 3,000 vehicles daily, 2) Roads with 1,000- 3,000 vehicles daily and 3) Roads with < 1,000 vehicles daily. Each category of road has a level of service for snow and ice control

that KDOT crews attempt to attain. Even with this approach, there are times when weather prevents KDOT from maintaining a passable highway. When this happens, the road is closed and reopened when the conditions allow. For more information about snow and ice management at KDOT refer to the following web page

https://www.ksdot.org/PDF_Files/SnowandIceEfforts.pdf .

-SAFETY-

In addition to an Operation performance measure, KDOT also had safety performance measures in place. Of these measures, the state measure for seatbelt usage is going to be continued. All other state safety measures were supplanted by the federal performance measures and are in the preceding Safety section of the federal performance measures and targets discussion. Seatbelt usage measures the percentage of vehicle occupants wearing seatbelts in Kansas as compared to the national average. In 2016 the percentage of Kansas vehicle occupants wearing seatbelts was 87% (in comparison with the national average of 90%). The state target is 88% seat belt usage by 2018. More information about seat belt usage in Kansas may be viewed on KDOT’s Performance Measure web page (link provided in the second paragraph of this discussion).

-INFRASTRUCTURE-

Moreover, KDOT established core performance measures for infrastructure

with measures for roads and bridges to ensure that these systems are being maintained at adequate levels. Roads and bridges are assessed annually using the data driven Pavement Management System and Pontis Bridge Management System. For Interstate and Non-Interstate roads, the minimum acceptable conditions levels targets were set at 85% for Interstate and 80% for Non-Interstate pavements, in PL-1 condition. A PL-1 rating indicates that the roadway surface is in good condition and needs only routine or light preventative maintenance. The following road table shows the actual road conditions statewide for the SFYs 2014-2016.

Statewide Roadway Condition for Interstate and Non-Interstate Miles				
Interstate Miles			Non-interstate Miles	
Fiscal Year	Minimum Acceptable Condition Level*	Actual Condition Level*	Minimum Acceptable Condition Level*	Actual Condition Level*
2014	85	98	80	89
2015	85	98	80	90
2016	85	97	80	92
* - Percent of miles in PL-1 condition				

For state-owned bridges, a bridge health index (BHI) was used, and was based upon a bridge count basis. Each bridge was counted and weighted equally regardless of bridge size. KDOT’s goal was to maintain the state-owned bridge system at a high level, and an overall bridge health index (BHI) of 85 was defined as the minimum acceptable condition level. On the following page is the bridge table showing the actual bridge conditions statewide for SFYs 2014-2016.

Statewide Bridge Health Ratings		
Fiscal Year	Minimum Acceptable Bridge Health Index	Actual Health Index
2014	85	87
2015	85	86
2016	85	87

Since this information is anticipated to be supplanted by the new federal performance measures and associated targets, this information is no longer being updated. New information based upon the federal performance measures and associated targets is anticipated to be in place no later than May 20, 2019 at which time the information will be amended to the STIP.