



**COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET**

Frankfort, Kentucky 40622
www.transportation.ky.gov/

Matthew G. Bevin
Governor

Greg Thomas
Secretary

March 27, 2017

Thomas L. Nelson, Jr.
Division Administrator
John C Watts Federal Building
330 W Broadway
Frankfort, KY 40601-1922

Dear Mr. Nelson:

As you are aware, the Fixing America's Surface Transportation Act (FAST Act) was enacted in 2015. The FAST Act continues the Highway Safety Improvement Program (HSIP) to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance and that is consistent with the Strategic Highway Safety Plan (SHSP).

Attached is the Kentucky HSIP FAST Act Investment Plan which will serve as the planning document for how HSIP funds are to be programmed and invested in upcoming years. The investment plan includes a history of KYTC's activities in the HSIP with information about the methodology, implementation, and benefits of each initiative that KYTC plans to pursue.

The purpose of this document is to clearly communicate the direction of Kentucky's HSIP. If you have any questions regarding this document, please let us know.

Sincerely,



Greg Thomas
Secretary

Attachment

cc w/a: Patty Dunaway
Andy Barber
Paul Looney
Jason Siwula
Jeff Wolfe



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Kentucky Highway Safety Improvement Program

FAST Act Investment Plan

Average Annual Apportionment (KY) - \$41,146,080

On December 4, 2015, President Obama signed the Fixing America’s Surface Transportation (FAST) Act into law—the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment. The FAST Act continues the successful Highway Safety Improvement Program (HSIP), providing Kentucky with an estimated average annual funding of \$41 million to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The FAST Act continues to require States to pursue under HSIP a data-driven, strategic, and performance-focused approach to improving highway safety on all public roads. The Act clarifies the range of eligible HSIP projects, limiting eligibility to activities listed in statute (most of which are infrastructure safety-related).

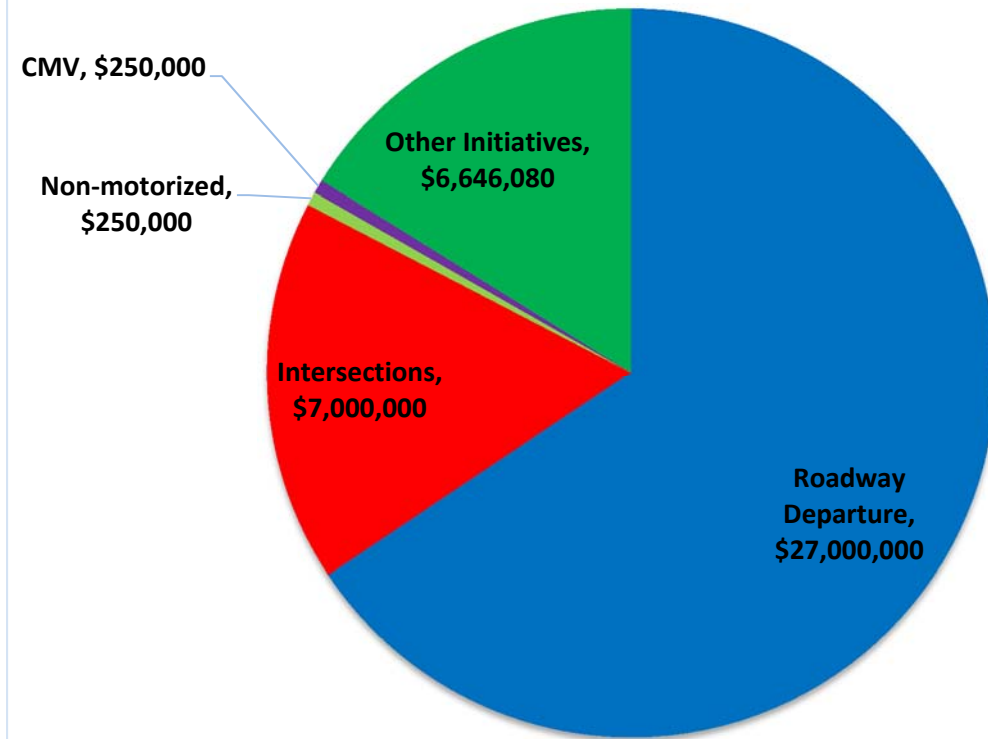
Mission – To reduce Kentucky’s highway fatalities and serious injuries

Vision – Through the administration of the Highway Safety Improvement Program, develop a data-driven highway safety culture in all phases of project development and delivery in Kentucky

Goal – To reduce the number of highway fatalities and serious injuries toward zero



Plan Overview



Roadway Departure – Kentucky is a Roadway Departure Focus State for the Federal Highway Administration. Nationally, roadway departure crashes account for 53% of fatal crashes, however, in Kentucky for the past five years, roadway departure crashes have accounted for over 70% of the roadway fatalities. The HSIP Investment Plan for FAST includes a significant investment in the reduction of roadway departure crashes at \$27 million (66%) annually.

Intersections – Intersections are an emphasis area in Kentucky’s 2015 – 2019 SHSP. Over the past five years intersection related crashes have accounted for nearly 13% of roadway fatalities and 35% of serious injury crashes. The investment of \$7 million annually (17%) of HSIP funding demonstrates KYTC’s commitment to improving intersection safety.

Commercial Motor Vehicles – Commercial motor vehicle (CMV) traffic is a significant and important component of the state’s freight transportation network. Of the 3,537 roadway fatalities in Kentucky from 2010 through 2014, 374 (10.6%) resulted from collisions involving CMVs. An HSIP investment of \$250,000 annually (1%) allows for focused analysis and strategy development for CMV-related crashes to be incorporated into HSIP initiatives.

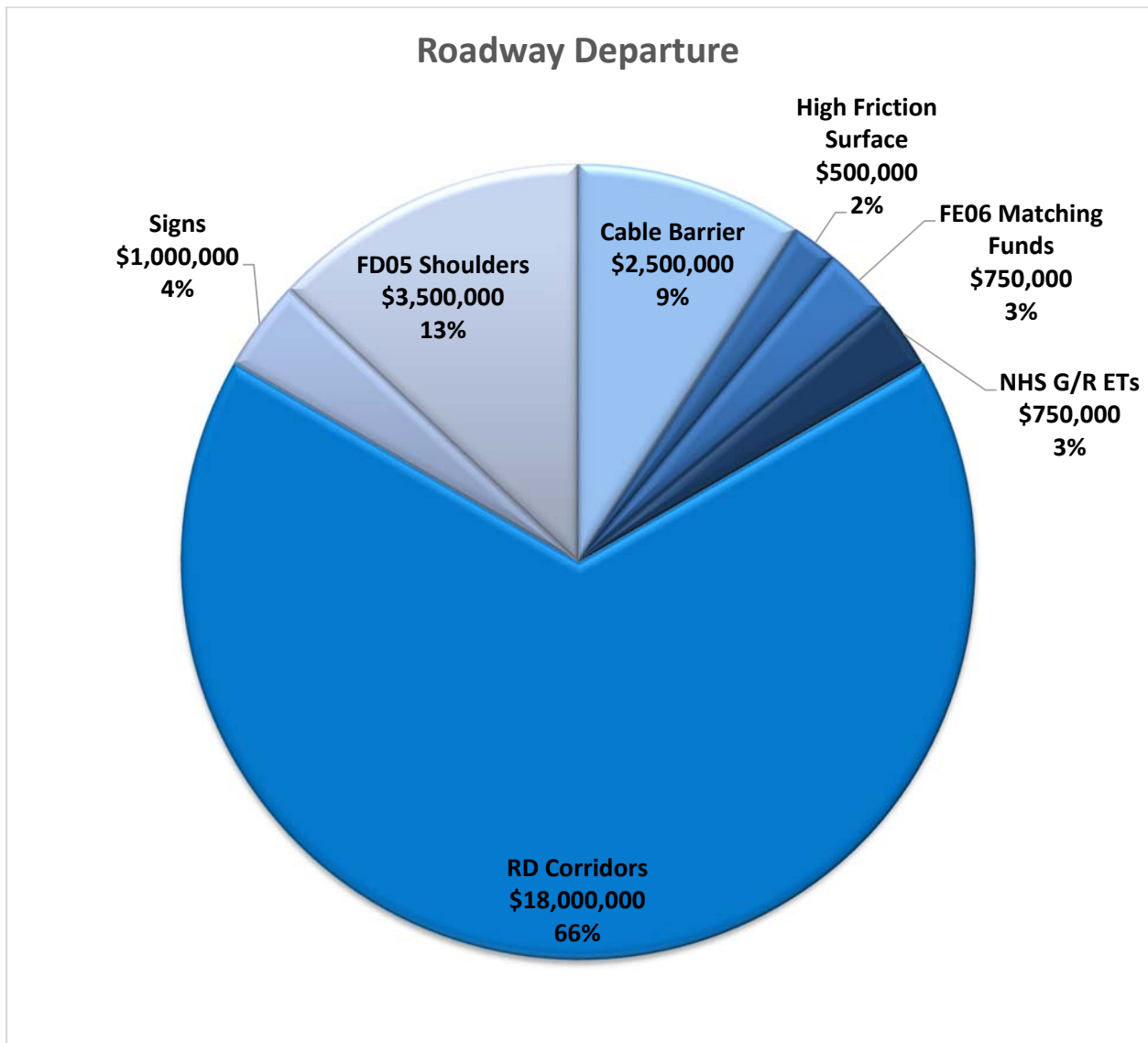
Non-Motorized Users – Each year, nationally, pedestrian and bicyclist fatalities comprise about 16% of all traffic fatalities with approximately 5,000 pedestrian deaths and 800 bicyclist deaths. Of the 3,537 roadway fatalities in Kentucky from 2010 through 2014, 301 (8.5%) were from crashes involving non-motorized users. An HSIP investment of \$250,000 annually (1%) allows for focused analysis and strategy development for crashes involving non-motorized users to be incorporated into HSIP initiatives.

Other SHSP Initiatives – The key components of these initiatives are opportunities to partner with KYTC District personnel and other stakeholders to deliver data-driven safety solutions, advance safety culture throughout our Cabinet, and obtain safety funding for projects of local importance while still utilizing a data-driven approach. These funds will provide for engineering activities to support key strategies within the SHSP.

Roadway Departure (\$27,000,000– 66%)

Current HSHP Goals:

Reduce the 5 year rolling average number of roadway departure-related fatalities to 420 by December 31, 2019



Roadway Departure Corridors (\$18,000,000 – 66%)

History – This initiative is a merger of the original Lane Departure – Resurfacing and Safety Corridor programs. Through this initiative, instead of only analyzing likely upcoming resurfacing projects, the entire roadway network is analyzed to locate the greatest opportunities to reduce fatal and serious injury roadway departure crashes. This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- Target rural, two lane, high speed (50 MPH and greater) facilities
- Utilize Highway Safety Manual (HSM) methodologies to prioritize route segments based on safety performance
- Implement improvements (while minimizing ROW & Utilities conflicts) such as:
 - Widen and pave shoulders (to obtain up to 2' final paved shoulder width)
 - Add rumble strips
 - Slope Improvements
 - Superelevation Improvements
 - Culvert Extensions
 - Ditching and Shouldering
 - Improved Signing and Delineation
- Funding – Up to \$250,000/District for development and \$1,250,000/District for delivery

Benefits

- Reduce roadway departure crashes and severity of roadway departure crashes
- Statewide implementation along most opportunistic corridors
- Opportunity to partner with KYTC District personnel and consulting community to develop and deliver data-driven safety solutions and advance safety culture in a compressed time frame
- Supports preservation and renewal of our transportation system infrastructures

Shoulder Widening (\$3,500,000 – 13%)

History – This is a new initiative for HSIP. This initiative will be used to establish or widen shoulders on KYTC maintained roadways.

Methodology and Implementation

- Identify potential project candidates utilizing HIS and resurfacing prioritization analysis or Roadway Departure Emphasis list
- Evaluate candidates for feasibility of rumble strip installation (ideally implementation of both Centerline and Edgeline/Shoulder rumble strips)
- Deliver projects by District annually
- Obtain an improved shoulder that may consist of:
 - Trenching unimproved shoulder and installing no more than 4” of DGA, 4” Asphalt Base, and 1.5” of Asphalt Surface to establish up to a 2’ paved shoulder
 - Adding embankment material to establish shoulder and/or improve slope
 - Extending minor drainage structures to incorporate shoulder widening

Benefits

- Reduce roadway departure crashes and severity of roadway departure crashes
- Potential to lessen Distracted Driving crashes and/or severities
- Supports preservation and renewal of our transportation system infrastructures

Cable Barrier – (\$2,500,000 – 9%)

History – Median crossover crashes often result in fatalities or severe injuries. Beginning in 2006, the Division of Highway Design evaluated and prioritized projects based on safety evaluations. Since 2010, HSIP has been the primary analysis and funding source for cable barrier implementation. One of the proposed Roadway Departure objectives outlined in the SHSP is to have 340 miles of cable barrier installed in Kentucky by December 31, 2019 and this initiative is in support of that objective. This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- Initiative is delivered by the Central Office Division of Highway Design
- Evaluate the Interstate System in Kentucky where longitudinal barrier does not exist
- Prioritize projects utilizing a data-driven approach
- Select, develop and deliver projects annually

Benefits

- Reduces median crossover fatalities and serious injuries
- Positive public relations for KYTC



Horizontal Alignment Signing (\$1,000,000 – 4%)

History – The Federal Highway Administration (FHWA) estimates that fatalities at horizontal curves account for 25% of all highway fatalities, yet horizontal curves are only a small portion of the nation’s highway mileage. The 2009 Manual on Uniform Traffic Control Devices (MUTCD) includes requirements, recommendations, and options for the use of traffic warning signs for horizontal curves to provide anticipated significant safety benefits to road users. Horizontal alignment signing is one of the engineering strategies outlined in the Strategic Highway Safety Plan (SHSP). This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- Use crash data to identify curves to enhance horizontal alignment signage
- Install horizontal alignment signage utilizing fluorescent yellow sheeting along the entire corridor where one “enhanced” curve is located for consistency and uniformity
- Target roughly 25% (approximately 6,880 miles) of the state maintained system
- Districts may submit Horizontal Alignment Signing projects for roadways that have recently been resurfaced as part of Division of Maintenance’s resurfacing program (FD05)
- Local Roadways may qualify for this initiative if the engineering and complete summaries are submitted to Central Office HSIP staff

Benefits

- Reduce roadway departure crashes and severity of roadway departure crashes
- Opportunity to supplement the KYTC District Engineering Support and Sign Maintenance functions through the installation of new horizontal alignment signage
- Promote statewide uniformity of horizontal alignment signage
- Meet driver expectations for horizontal alignment signage



National Highway System End Treatments (\$750,000 – 3%)

History – During the mid 1990s, KYTC agreed to start replacing the turndown style (Type Seven and Texas Twist) end treatments while completing rehabilitation projects. In the mid 2000s, FHWA placed greater emphasis on the removal of these types of end treatments from the National Highway System (NHS) in Kentucky. For the past several years, HSIP has supported this effort through this initiative. This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- End treatments that are located on the NHS (expanded to Federal Aid routes once NHS is complete) that are turndown style or spearing are eligible for this initiative
- Additional guardrail improvements may be included on eligible projects
- As the Districts are able to gather the required information and documentation to let these projects to contract they will be programmed and let with these funds
- Install delineation on guardrail being replaced through this initiative
- New barrier installations are not permitted through this initiative

Benefits

- Reduce roadway departure crashes and severity of roadway departure crashes
- Increase delineation of roadside safety hardware
- Help meet KYTC and FHWA goals for the removal of these end treatments from the NHS
- Supports preservation and renewal of our transportation system infrastructures



FE06 Matching Funds (\$750,000 – 3%)

History – Since 2012, HSIP has matched the funding of the New Guardrail program (FE06) for the installation of new guardrail across the state according to the process that KYTC follows. These funds will further this effort. This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- Initiative is developed and delivered by the Central Office Division of Maintenance
- Identified project candidates that meet KYTC warrants for new guardrail installation are ranked and installed within the constraints of authorized funding

Benefits

- Reduce severity of roadway departure crashes
- Shielding of roadside hazards
- Utilize funds to supplement an existing KYTC program that uses a data-driven approach to improve safety statewide
- Supports preservation and renewal of our transportation system infrastructures

High Friction Surface (\$500,000 – 2%)

History – High Friction Surface Treatment (HFS) is one of the initiatives originally outlined in the HSIP MAP-21 Investment Plan. HFS involves the application of very high-quality aggregate to the pavement using a polymer binder to increase pavement friction. This is a continuation of the investment program originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- Utilize HSM methodologies to evaluate the roadway network for wet pavement condition crashes
- Provide analysis to indicate overrepresentation of targeted crashes
- Evaluate existing and previous installations for maintenance needs
- Implement projects annually where reinstatement is desired or where new installations provide the best opportunity to reduce overall fatalities and serious injuries

Benefits

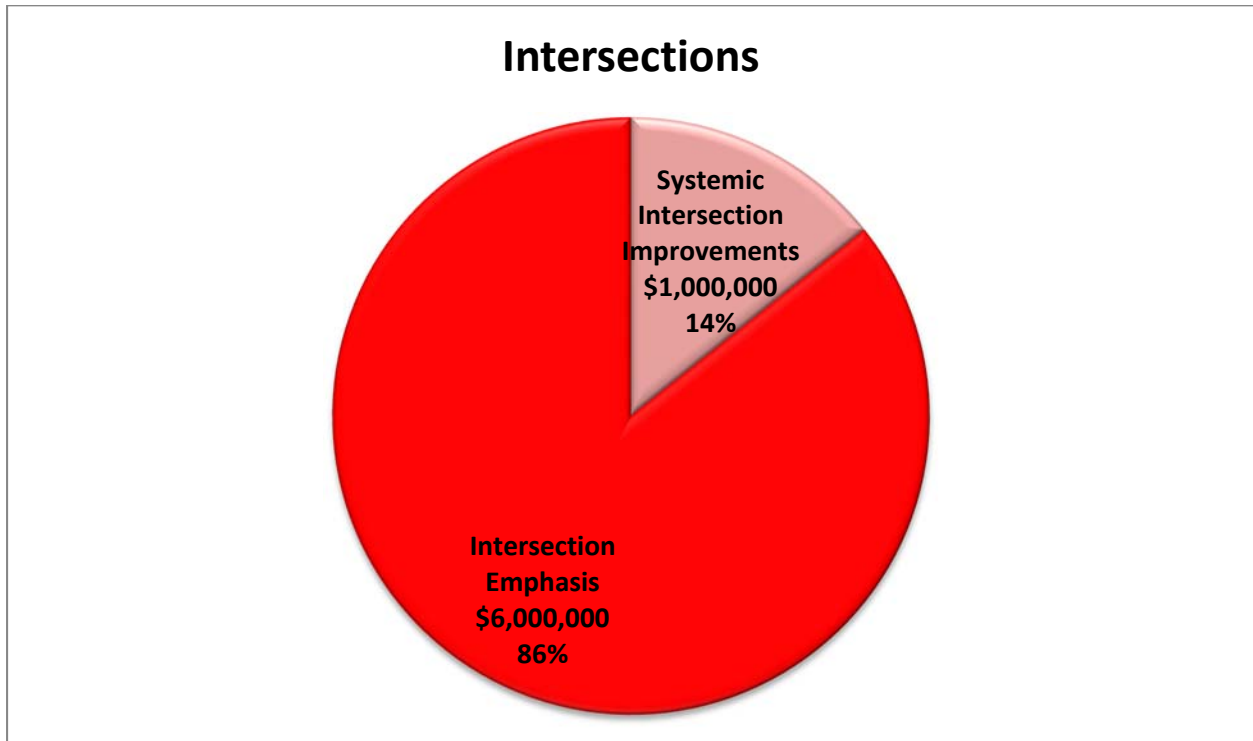
- Reduce roadway departure crashes and severity of roadway departure crashes
- Statewide implementation based on data-driven methods
- Positive public relations for KYTC



Intersections (\$7,000,000 – 17%)

Current Goals:

- To reduce the number of annual roadway intersection fatalities to 76 by December 31, 2019



Intersection Emphasis (\$6,000,000 – 86%)

History – This initiative furthers the goals of the 2015 – 2019 SHSP Intersections Emphasis area. This initiative evaluates the network for site-specific opportunities to improve safety by minimizing or eliminating risks to roadway users. This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- Utilize HSM methodologies to prioritize intersections statewide based on safety performance and create a prioritized list
- For each District, review approximately the top 20 intersections on the prioritized list to document the general status of each. Using this information, select approximately 5-10 intersections for further study
- For these selected intersections, perform field reviews to document existing conditions and potential areas of improvement
- Perform a Crash Analysis and further refine the list of potential safety improvements
- Develop and deliver projects to implement the selected safety improvements
- Funding – Up to \$500,000 / District (includes all phases)

Benefits

- Reduce intersection related fatalities and incapacitating injuries
- Opportunity to partner with KYTC District personnel to deliver data-driven safety solutions and advance safety culture
- Partner with the KYTC Planning function by identification of future project candidates with challenges that are not able to be alleviated utilizing HSIP funding
- Supports preservation and renewal of our transportation system infrastructures

Systemic Intersection Improvements (\$1,000,000 – 14%)

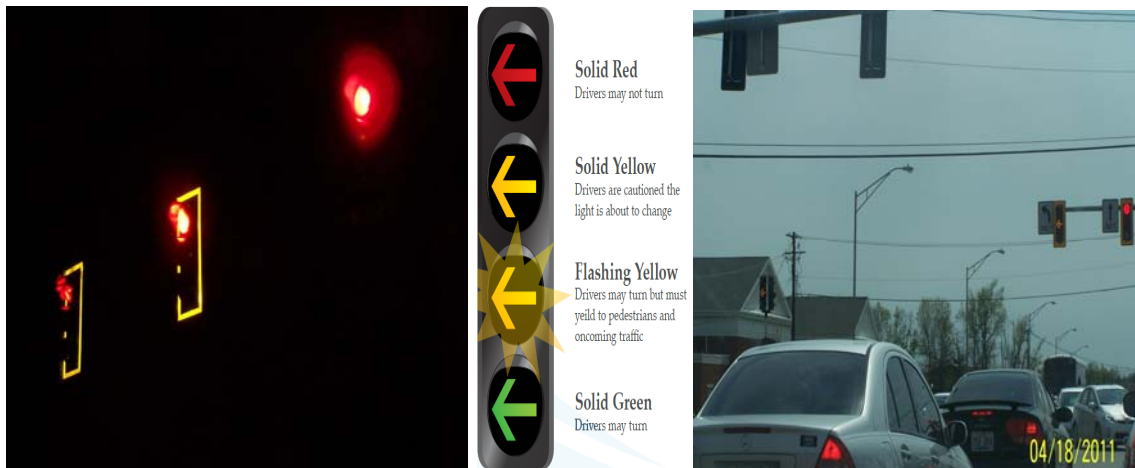
History – This initiative furthers the goals of the 2015 – 2019 SHSP Intersections Emphasis area. The systemic approach to safety involves widely implemented improvements based on roadway features correlated with specific severe crash types. This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan.

Methodology and Implementation

- Use HSM methodologies to identify and prioritize a list of intersection attributes correlated with severe crash types
- Determine low-cost countermeasures to mitigate the highest priority intersection features
- Systemically implement appropriate low cost countermeasures according to policy such as:
 - Retroreflective signal back plates
 - Flashing Yellow Arrow
 - Supplemental signal heads
 - Standard signage and markings
 - Pedestrian signage and markings
 - Appropriate signal clearance intervals

Benefits

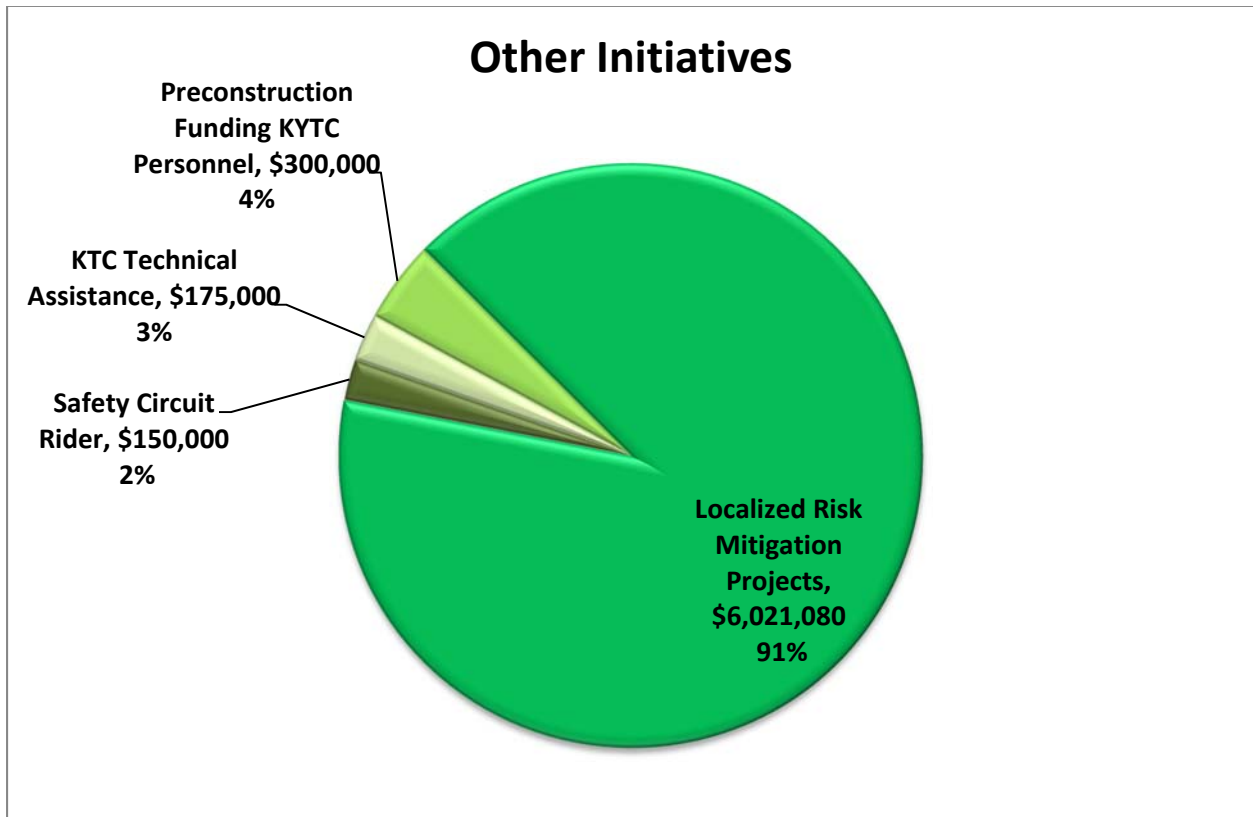
- Reduce intersection related fatalities and incapacitating injuries
- Develop standards for intersection signing and marking aimed at implementation homogeneity
- Meet driver expectations for uniformity of intersection signage and markings



Other SHSP Initiatives (\$6,646,080 – 16%)

Current Goals:

- To further the goals of the Roadway Departure, Commercial Motor Vehicle, Non-Motorized Users, and Intersection Emphasis Areas
- Continue to partner with KYTC District personnel to deliver data-driven safety solutions and advance safety culture



Localized Risk Mitigation Projects (\$6,021,080 – 91%)

History – Since the establishment of the HSIP, Local Agencies and Districts have played a critical role in the development and delivery of HSIP projects. Since the HSIP is required to be data-driven, it is critical that projects are chosen to improve an existing or potential crash problem. Localized Risk Mitigation Projects will not have minimum eligibility criteria to be considered for this initiative; however, all projects should conform to the initiative guidelines outlined below. This is a continuation of the investment initiative originally identified in the HSIP MAP-21 Investment Plan. Funding for annual maintenance of the Raised Reflective Pavement Marker system has now been included as an eligible expense from this initiative.

Methodology and Implementation

- Annual maintenance of Raised Reflective Pavement Marker system
- Potential project candidates may be submitted throughout the year
- Evaluation and selection schedule will be coordinated with the State Highway Engineer Office
- Districts will coordinate Road Safety Audits utilizing a multi-disciplinary team on potential projects
- Potential projects will have existing conditions inventoried (e.g., HIS, severity ratings, etc.) by the CO HSIP staff
- All potential project inventory data will be analyzed to determine present risk factors and a score will be assigned to each project location
- Potential projects will be prioritized utilizing the analysis to determine which projects have the greatest opportunity to positively impact safety
- The prioritized statewide list of projects will be submitted to the State Highway Engineer Office for project selection and approval based on available funding
- Approved projects will be programmed and assigned a target letting date by the CO HSIP Staff
- Selected projects will be developed by the appropriate District and delivered to letting by the CO HSIP Staff through the Cabinet’s standard Construction Procurement process

Initiative Guidelines

- Maximum cost up to \$500,000 / project (includes all phases)
- Multiple projects for consideration may be submitted within the same District up to \$2,000,000 / fiscal year
- All approved projects must be let through the Division of Construction Procurement
- Projects must address RSA Findings with appropriate countermeasures
- Projects must conform to other Cabinet policies and guidelines
- Districts must continue to support the CO HSIP staff in other HSIP emphasis area project development as needed to participate in the Localized Risk Mitigation Projects initiative

Benefits

- Opportunity to partner/develop data from safety culture
- Be responsive to local/regional needs
- Supports preservation and renewal of our transportation system infrastructures

Preconstruction Funding – KYTC Personnel (\$300,000 – 4%) – This funding will be used to fund project development work for HSIP projects, such as development of environmental documents, right-of-way certifications and utility notes.

Kentucky Transportation Center Technical Assistance (\$175,000 – 3%) – This funding will be used to fund the Kentucky Transportation Center’s technical assistance of the HSIP program. This assistance includes data analysis, evaluation of project effectiveness, evaluation of project completion, HSIP Annual Report assistance and other technical activities that support the Division of Traffic Operations in the administration of the HSIP in Kentucky.

Safety Circuit Rider (\$150,000 – 2%) – This funding will be used to further the Safety Circuit Rider program in Kentucky through the University of Kentucky Technology Transfer Program. The Safety Circuit Rider assists local governments with engineering issues and also provides training for local governments. Each year the Safety Circuit Rider has six focus counties where they perform crash data analysis, conduct road safety audits, and identify countermeasures to reduce crashes on public roadways that are not a part of the state system. This program is currently the primary mechanism to provide support for safety on local roadways.

HSIP Investments - All Initiatives

