



Highway Safety & Traffic Operations

RoadMap

September 2022



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RoadMap

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**SPEED
LIMIT**

40



Introduction to the Highway Safety and Traffic Operations Division

The Highway Safety and Traffic Operations Division (HSTO) is comprised of twelve units within four sections. The sections have vision and mission statements that focus on improving various aspects of safety and mobility. When combined, it creates an overall Vision for HSTO of **A Safe, Reliable, and Efficient Transportation Network**.

Responsibilities across HSTO cover a wide range of activities, as will be highlighted throughout this document. The pages of the RoadMap will provide a brief description of each unit, highlight our accomplishments over the last few years, paint a picture of what drives our business and where we are heading, and note any key challenges we face. Together, this provides a four-to-five-year look at HSTO.

Cross-Cutting Actions

While sections and units have their specific focus, many division activities are cross-cutting. Across the division, HSTO staff provide guidance, develop tools and policies, and support districts and other partners on topics under the highway safety and traffic umbrella. Here's a look at a few key cross-cutting strategies:



HSTO Training Program. The need for a well-trained and knowledgeable staff has been noted as a top priority by HSTO and the District Traffic Units. The HSTO Training Program consists of two parts:

- o **Traffic Academy.** Provides fundamental skills and knowledge foundation for new or recent hires in the District Traffic Units and HSTO. Broadens participants understanding of key roles and responsibilities within the highway safety and traffic areas of responsibility.
- o **Training Subcommittees.** Teams of district and central office staff who define the advanced subject matter training needed for each topic area under highway safety and traffic.



Advancing the Use of Performance Data. Access to more robust data sets and the tools to analyze them has created opportunities to better understand our business and where to focus improvements. The continued pursuit and use of performance-based information will be key to improving many aspects of HSTO.



Focus on Coordination. With a strong focus on policy and direction setting, it's essential that HSTO's efforts are well-coordinated with the districts, planning partners, and other key stakeholders. Requesting and welcoming input at various stages of development will help ensure final products meet and exceed expectations.



HSTO Organization

TSMO Operations & Performance



Temporary Traffic Control

Using both lanes to the merge point can reduce work zone congestion by nearly 40%.



Systems & Performance

The Traffic Operations Analytics database has correlated over 50 terabytes of information, which is the equivalent of 75,000 CDs worth of data.



TMC Operations

Each year, the STMC monitors more than 20,000 incidents and provides 1,200 detailed reports to executive staff and Area Command.

TSMO Arterials and Planning



Traffic Signals

The 13,500+ traffic signals in Pennsylvania are owned by more than 1,150 municipalities, 80% of which own less than 10 signals.



Arterial Operations

Retiming of 126 traffic signals in District 6 led to a savings of 2.5 mil hours of delay and an overall benefit of \$88 for every dollar spent.



Planning & Funding

Since the TSMO Funding Initiative began in 2019, \$20M has been provided for 53 projects with an additional \$10M allocated for 33 projects set to begin in the Fall of 2022.

Traffic Engineering and Permits



Signing & Pavement Markings

PennDOT manages the largest in-house line painting program in the country painting over 114,000 lane miles, which could circle the earth five times.



Highway Occupancy Permits

PennDOT issued 90 highway occupancy permits for new warehouse facilities in 2020 and 2021, generating an estimated 11,000 daily truck trips on our highways.



Special Hauling Permits

PennDOT issued 358,000 special hauling permits in 2021, totaling 17.6 million tons of freight.

Highway Safety



Safety Engineering & Risk Management

478 miles of High Tension Cable Median Barrier have been installed on freeways to address cross median crashes, resulting in nearly a 75% reduction in fatal crashes.



Crash Analysis

Of the 1,230 crash fatalities in 2021, 346 people likely would have survived if they were wearing a seatbelt.



Program Services

According to national data, driver behavior is a factor in over 90 percent of crashes.



Temporary Traffic Control

Deploying effective work zones is critical for ensuring the safety of workers and motorists. The Traffic Control Unit provides oversight, guidance, and training, as well as deployments of innovative work zone applications. The vision of safe work zones that maintain mobility, mitigate crashes, and ensure the movement of goods and services guides the overall efforts of the Unit.

Accomplishments



Automated Work Zone Speed Enforcement

AWZSE is a joint safety program between PennDOT, PA Turnpike Commission, and the PA State Police. Authorized by Act 86 of 2018 as a 5-year pilot program, AWZSE has led to a 25% reduction of fatal crashes and helped us achieve a reduction of 100 overall crashes annually in work zones. Excessive speeding, greater than 11 MPH over the speed limit, has been reduced to 3% in work zones since its introduction.

Work Zone Speed Limit Reduction Policy

A data-driven process was established to ensure that appropriate speed limits are established in work zones. This effort works to mitigate speed variance which can lead to crashes, and considers other mitigation strategies in lieu of speed reductions to create safe work zones.

Raptor Rumble Strip Deployment Device

The Raptor offers a safe deployment of temporary portable rumble strips in work zones. The device can be mounted to the front of a tandem truck and facilitates deployment and retrieval without workers leaving the vehicle. Use of the device helps combat distracted driving in a work zone by creating audible and vibratory warning for drivers.

FREEVAL-PA

Building on an effort that began in North Carolina, PennDOT established the FREEVAL-PA road user delay and queuing assessment tool. This tool replaces outdated methodologies to better evaluate work zone impacts on limited access highways using simulation and modeling capabilities. Deployment included seven self-paced training modules and a website with a variety of information.

Mobile Barrier Device

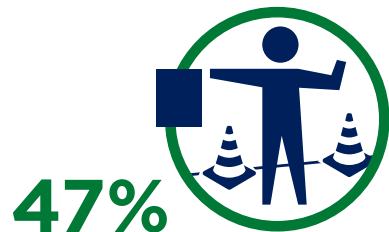
This mobile device consists of a portable barrier, utility vehicle, and flat-bed trailer to create positive protection in short-term work zones. The first real-world application took place along I-95 with a positive response from county staff involved.

Temporary Traffic Control Safety Training

To improve work zone training for entry-level staff, several virtual self-paced training modules with knowledge assessments were developed. These modules were designed to provide the basics of work zone principles and safety awareness, and have been successful at filling a training gap and ensuring consistent training across the state.

Smart Work Zone Device Pilot

This pilot in District 3 included field testing of smart arrow boards, speed monitor devices, and location sensors. The effort involved coordination between the vendor, business partners, District, and Central office staff and served as a good road test for new technology.



47% of fatalities in work zones resulted from drivers speeding or driving too fast for conditions.

Where We Are Going



The Driver

Intrusion Free Work Zones. Ensuring everyone gets home safely at the end of each day is the most important goal of a work zone. This means creating an environment that is safe for motorists traveling through as well as safe for the people performing the needed roadway improvements. Sharing the road is a work zone reality. However, sharing the same area of that roadway should not be.

The Road Ahead

Using Smart Arrow Boards. Through partnerships, PennDOT can integrate technology into its arrow board fleet to provide location and advance notification of lane closures. This will encourage approaching traffic to move into an open lane away from the work area, avoiding potential collisions with both equipment and workers.

Use Social Media to Educate Young Drivers. Engaging young drivers via TikTok, Instagram, and similar platforms can provide opportunities to educate them about work zone safety and the dangers of distracted driving. Real stories from the workers' perspectives can provide context for drivers and encourage them to stay focused when driving through work zones.

Develop a Work Zone Intrusion App. Following in the footsteps of Minnesota DOT, PennDOT will develop a mobile friendly application for field staff to identify near misses and work zone intrusions. Data collected will help us better understand driver behaviors, accident trends, and shortfalls that will steer program improvements to enhance work zone safety.

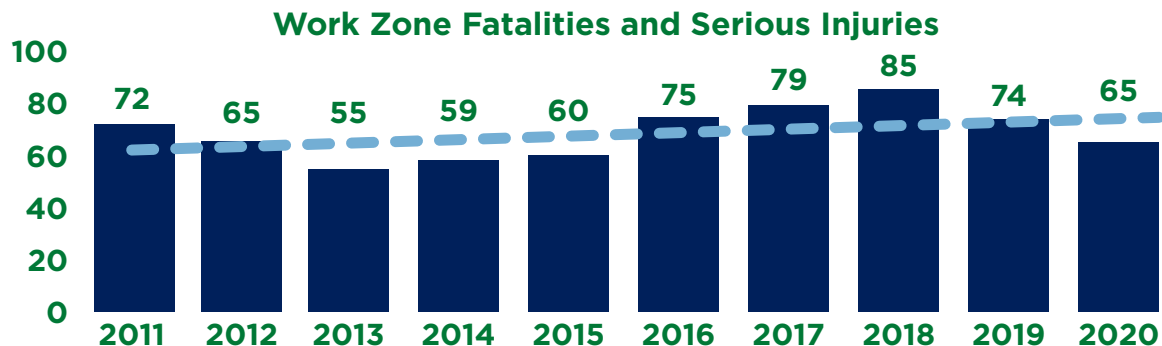
The Driver

Maximizing Mobility in Work Zones. Designing and deploying effective work zones is key to reducing congestion and delay. Maintaining lane capacity and free flow operations during peak periods further allows motorists to travel without unexpected stoppages that can lead to serious crashes.

The Road Ahead

Creation of a Lane Reservation System. Development of a tool to better understand the "when and where" work can be done on our roadways will improve mobility and lead to much more effective work zone operations. Information from LRS can then be shared with software tools and our partners to provide the best possible work zone information for use in a wide-range of applications.

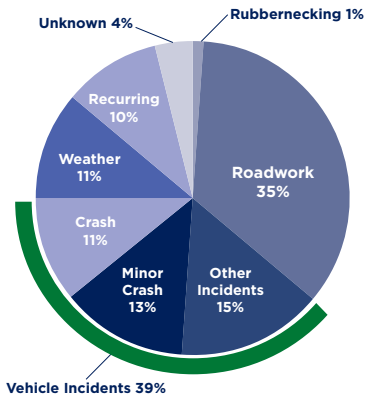
Further Implementation of Variable Speed Limits. Evolving from traditional static speed limit signs, variable speed limits provide the capability of monitoring traffic and changing speed limits accordingly based on travel conditions. This approach enhances driver expectations and mitigates speed variances that can lead to rear-end collisions in work zones.





Mobile Barrier Device

Work Zone Congestion Causes



Work Zone Crash Severities

15 Fatalities

50 Serious Injuries

388 Minor Injuries

184 Possible Injuries

220 Injuries of Unknown Severity



Traffic Systems and TSMO Performance

The Traffic Systems and TSMO Performance Unit oversees the majority of PennDOT systems that support 24/7 traffic management. Data from these systems is turned into useable information through development of performance measures, and further used to identify and develop additional tools to improve operations.

Accomplishments



TSMO Performance Program Growth

In recent years, the TSMO Performance Program has grown and achieved national recognition. In 2021, the program was awarded “Best TSMO Project” and the “Overall TSMO Award” by the National Operations Center of Excellence. Program highlights include development of a data-driven Pennsylvania congestion pie chart, refinement of determining factors of crashes in existing congestion, correlating weather to hazardous winter driving conditions, and expansion of traffic incident management performance measures.

511PA Services for More Customers

511PA has added a number of new features for the traveling public. Many of the additions have focused on commercial vehicles including weather-related vehicle restrictions, a commercial vehicle profile for mobile devices, and low clearance bridge data. Additionally, electric vehicle charging locations have been added to the 511PA map.



Deployment of Virtual Queue Protection Corridors

The Department’s command and control software for traffic management centers can now pre-define “virtual queue protection corridors” for work zones and known back-up locations. Using INRIX speed data, this feature can automatically change upstream message signs when speeds drop below a defined threshold. Without the need for additional field detection equipment, this tool helps us reduce rear-end crashes by alerting motorists ahead of stopped/slowed vehicles.

The First Integrated Corridor in Pennsylvania

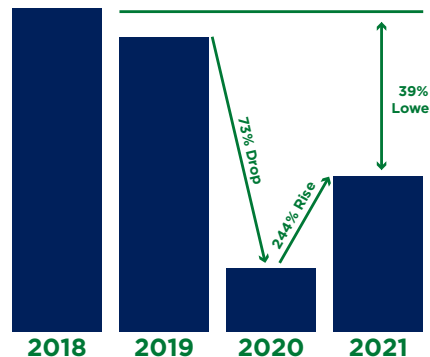
In the summer of 2021, I-76 in Montgomery and Philadelphia counties was equipped with 72 variable speed limit (VSL) devices. These VSLs replace typical static speed limit signs with a displayed speed based on an intricate algorithm of real-time vehicle speeds. The system is designed to reduce speed limits one mile upstream of a slowdown and can also post appropriate queue protection messages. The algorithm and system which operate the corridor were designed and deployed by the Unit.



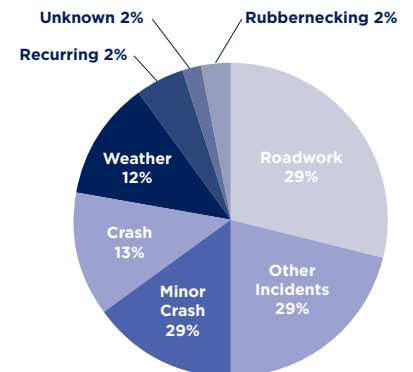
Modernized Video Sharing

In the Fall of 2021, a web-based video sharing solution, MView, was obtained to provide public incident management partners easy access to PennDOT owned cameras. A non-exclusive video sharing agreement allows third party access to our traffic camera video feeds, with certain restrictions. These agreements have been transitioned from paper to the eGrants system to provide applicants with a more streamlined process to register, sign, and track the agreement approval process.

Total Congestion Impact Core Network 2018 to 2021



2021 Congestion PA Core Roadway Network





The Driver

Expanded Use of Performance Data. Core performance management data needs to be shared with a wider audience in a more customer-relatable format.

The Road Ahead

Create an Annual TSMO Metrics Dashboard. This will improve access for operations staff and decision makers, while providing information in an intuitive and easy to use format.

Integrate New Data Sources. Incorporating new data sets like origin/destination and socioeconomic data will expand the relatable nature of our analysis capabilities.

The Driver

Improve Public-Facing Traffic Data. There is a need to provide higher quality and more timely information, so that partners have better situational awareness and motorists can make more informed travel decisions.

The Road Ahead

Expand Commercial Vehicle Offerings in 511PA. Provide additional information on commercial vehicle restrictions and other potential hazards, with the goal of facilitating the movement of goods throughout the state while protecting Commonwealth assets, such as bridges, from damage.

Automate Hazardous Winter Driving Messages. Specific weather conditions have been determined to increase the likelihood of crashes. An update to our command and control software will support automated messages to alert motorists as they approach a confirmed hazardous winter condition.

Establish a Work Zone Data Exchange (WZDx) External Feed. A move towards the national WZDx feed will ensure key information about Pennsylvania's incidents, lane restrictions, and critical messages can be used effectively by outside partners.

Expand Use of Color in Message Sign Messages. Expanding the use of color beyond safety campaigns will provide opportunities for our everyday messaging.

The Driver

Aging ITS Infrastructure. Ever increasing maintenance costs and the preparation for connected and autonomous vehicles requires smart decisions to maximize use of staff, equipment, and available funding.

The Road Ahead

Implement Virtual Highway Advisory Radios (HAR). HAR technology has become a less effective tool in recent years, largely due to its limited bandwidth and reliance on AM radio. Geo-targeted "virtual" HAR will open opportunities to share information about major traffic events, unrestricted by the location of an ITS device along the road. This information will be available through 511 via the website, mobile app, and by calling the regional 511 traffic report.

Explore Virtual Changeable Message Signs. Building on the lessons learned from virtual HAR, virtual signs would allow geo-targeted priority messaging to appear in dash of connected/partner vehicles through a dynamic WZDx data feed.

Expand MView Video Sharing Partnerships. Increasing outreach of the MView video sharing platform to our traffic incident management partners and other video sharing entities like municipalities, cities, and sporting complexes will help improve comprehensive situational awareness.

The Driver

A Less Congestion, More Reliable Road Network. TSMO works to maximize the effectiveness of our roadways, without the need for additional lanes.

The Road Ahead

Develop a Lane Reservation System. Working together with the Temporary Traffic Control Unit on development, the Lane Reservation System will provide PennDOT with a tool to better manage the reservation, review, and approval of lane restrictions for roadwork, utility work, and other roadway uses. In doing so, it will help with worker/motorist safety, limit work zone conflicts, and improve mobility.





Traffic Management Center (TMC) Operations

The TMC Operations Unit works to improve traffic flow around the state with a focus on PennDOT's core roadway network. By providing oversight and guidance to the four Regional TMCs and three district TMCs, along with management of a Statewide TMC, the Unit strives to provide timely and accurate information to motorists so they are aware of potential traffic queues and can make informed travel decisions.

Accomplishments



TSMO Guidebook Part V: Operations

Part V is PennDOT's first comprehensive guidance for the operation of traffic management centers. The guidebook was developed through extensive coordination with a Technical Working Group of TMC staff with a focus of improving TMC operations.

TMC Bootcamp

The TMCs are the front line for traffic management and key to our efforts of moving people and goods. The Bootcamp provides a week-long training for TMC operators and supervisors covering all aspects of TMC operations, including policies, procedures, and best practices.

ITS Maintenance Asset Management

Building on the Traffic Signal Asset Management System (TSAMS), a new module was developed for ITS. This module includes device cost information, work authorization, and capabilities to track maintenance costs and device downtime.



Where We Are Going



The Driver

Ensuring Effective and Consistent Traffic Operations. With multiple traffic management centers across the state, it's important that traffic operations is managed consistently, decisions are made quickly and effectively, and messaging to the public is clear and concise.

The Road Ahead

Implementation of Part V. The Operations portion of the TSMO Guidebook is now complete. Over the next few years, we will work to ensure all TMCs are following its guidance and performing traffic management consistently across the state.

Development of Traffic Operations Plans. A plan in each of the four Regional TMC regions will include information on QA/QC procedures, traffic incident management planning, continuity of operations guidance, and performance metrics and targets.

Establish TMC Performance Metrics. The overall TSMO Performance program continues to develop information that can help shape our TMC efforts. We will define and use performance metrics to improve TMC operations, evaluate the effectiveness of projects and policies, and deploy effective solutions to areas with similar challenges.

The Driver

Limited Funding Available for ITS Maintenance. As our ITS infrastructure expands and existing devices continue to age, more money is needed on the maintenance side. Yet, funding has remained level year after year while costs continue to increase. This leaves a potential shortfall requiring new ways of thinking to address.

The Road Ahead

Development of a Funding Plan. The plan will look to maximize results based on current funding levels. Information will include funding distribution and the identification of potential alternate funding sources for performing ITS Maintenance.

Develop the TSMO Guidebook Part IV: ITS Maintenance. This portion of the TSMO guidebook series will standardize policies and procedures for ITS maintenance and highlight best practices from the RTMC regions and other states.

Improve ITS Maintenance in TSAMS. New functionality in TSAMS will help us better understand and track the costs of ITS Maintenance and define opportunities to improve ITS device maintenance decisions (repair, replace, retire).

The Driver

Relationships with the Traffic Incident Management (TIM) Community. TMCs share information about events occurring on our roadways, but TIM workers are the boots on the ground who can clear incidents and restore traffic to normal conditions.

The Road Ahead

Establishing TIM Liaisons. This starts by identifying a Statewide TMC TIM liaison to coordinate with the Maintenance side of PennDOT. TIM liaisons will also be established for each TMC across the state to work with their local TIM Teams.

Strengthen the TIM Role of the TMCs. A guideline for TMC engagement with the TIM teams will developed. Establishment of TIM teams in key areas without them will be encouraged.

Challenges



Maintaining a Culture of Continual Improvement

Traffic operations tools and techniques are often developed and modified to improve our ability to manage traffic. Maintaining a mindset of continual improvement can be a challenge, and we need to better demonstrate how the work of TMCs truly impacts travel.

Staff Retention and Career Building

Finding great candidates for the critical 24/7 area of traffic management is often a challenge and can be made worse by delays in the hiring process. Once staff are on board, retention can be difficult as TMC positions are generally not considered part of the career path for other traffic positions. Eliminating roadblocks often takes a great deal of effort and a more permanent solution is vital to ensure staff have opportunities to grow with the department.





Traffic Signals

The Traffic Signal Unit facilitates the movement of people and goods through signalized intersections by ensuring traffic signals are implemented consistently and effectively as a traffic control device. This is done through a focus on asset management, product evaluations, structural reviews, and ensuring information is widely accessible to support those in the traffic signal field.

Accomplishments



Traffic Signal Specification and Product Evaluation Modernization

To facilitate consistent bidding and minimize risk to the Department and contractors, all traffic signal specifications were rewritten and streamlined. This effort incorporated new technology and will minimize the need for project-specific special provisions, making it easier to use pre-approved equipment listed in Bulletin 15. By moving to the Electronic Construction and Materials Management System (eCAMMs) and working closely with the Materials Testing Laboratory, all products were recertified for the new specifications and the backlog of active product evaluations was eliminated.

TSAMS Growth and Buy-in

The Traffic Signal Asset Management System (TSAMS) proved to be an invaluable tool during the pandemic. Asset information that's organized and available electronically continues to demonstrate great benefit in today's telework environment. Support and champions at the District level have encouraged the use of TSAMS, while continual feedback is helping focus improvements.

Municipal-Wide Traffic Signals Maintenance Agreements

A policy established in late 2020 now requires traffic signal owners to enter into a municipal-wide Traffic Signal Maintenance Agreement whenever a new or revised traffic signal permit is issued. This saves significant time by eliminating the need for a maintenance agreement on every project. Use of a standard template reduced agreement execution time by 75%.

Single Source Contractor Management

External users (contractors and municipalities) needing CWOPA credentials to access various traffic signal software were consolidated under one supervisor in ESS. Doing so eliminated the task across the districts for ~85 contractors. AskHR's new online Contractor Actions website, creation of an internal tracking database, and working closely with IT helped to greatly streamline the process.



Testing signal video detection from the office



The Driver

Safe and Effective Traffic Control. Well-designed, constructed, and maintained traffic signals can be an effective tool for managing traffic. However, signals that are poorly designed, constructed, or maintained can lead to increased congestion and safety concerns.

The Road Ahead

Testing Facilities. Currently, PennDOT relies primarily on other states Authorized Products List (APL) for review and approval of traffic signal equipment. Establishing our own testing capabilities will give us a better understanding of the technology and help us become a leading state in the deployment of cutting-edge traffic signals.

Pilot Projects. Implementing new technologies in real world conditions offers information not available through lab testing alone. Pilot projects also establish transparency with manufactures/suppliers, districts, and local governments.

The Driver

Customer Service. This includes all aspects of our program such as ensuring timely response to customer questions and issues, efficiently reviewing new traffic signal product submissions, and ensuring the best signal applications at intersections across the state.

The Road Ahead

Improving Our Customer Service. Eliminating the backlog of product evaluations was a key first step. Moving forward, we will continue to focus on timely and efficient reviews to ensure quality products are approved for use in Pennsylvania.

Incorporate User Input and Best Practices. Working closely with districts, municipalities, and contractors will help us understand the guidance needed as well as system limitations impacting our ability to efficiently manage traffic signals. Combined with an understanding of national best practices will help the Department advance our overall signal program.

Improvements for Vulnerable Users. Traffic signals are traditionally designed based on the vehicular traffic traveling through an intersection. However, we have an opportunity to better address vulnerable users like bicyclists and pedestrians to ensure maximum performance of the intersection for all users.







Arterial Operations

The Arterial Operations Unit has three fundamental roles. These include implementation of new and innovative traffic signal technologies, and management of the Green Light-Go (GLG) and Automated Red-Light Enforcement (ARLE) Funding Programs. The third role is oversight and guidance as PennDOT pilots ownership, operations, and maintenance of traffic signals on key corridors.

Accomplishments



Department Ownership of Traffic Signals

PennDOT has taken ownership of 57 traffic signals in District 6 along routes adjacent to Interstate 76. This endeavor included many elements like establishing legal agreements with three municipalities, membership with PA One Call, and development of PennDOT's first traffic signal maintenance contract.

Connecting Traffic Signals for Command and Control

PennDOT's Maxview software now includes connection to more than 700 traffic signals. This connection allows traffic management staff to adjust signal timings based on traffic conditions or when traffic is diverted to arterials during major roadway incidents.

Restoration of the Green Light-Go Program

Green Light-Go (GLG) came to a sudden stop in 2020 as funding was diverted elsewhere during the pandemic. This resulted in the brakes being applied to 57 signal projects across the state. Through continued coordination with the affected municipalities, all projects have since been resumed and funding has been reinstated to continue building on the successes of the program.

Transition to eGrants for GLG and ARLE

The GLG and Automated Red Light Enforcement (ARLE) grant programs offer targeted funding to improve traffic signal operations. eGrants is a management software used by multiple state agencies to administer and track grants. Both grant programs are now administered through eGrants, which has significantly reduced the time required for processing agreements and reimbursements.



Full modernization of this intersection was funded through the Green Light-Go program. Mobility was improved by using Flashing Yellow Arrow for the left-turn movement.



PennDOT is collecting high resolution event logs from Diverging Diamond interchanges for Automated Traffic Signal Performance Measures.



The Driver

Better Management of Traffic Signals. Traffic signals often fall into the category of “set it and forget it.” This leads to equipment performing below its capabilities and maintenance issues routinely left uncorrected. Together, these lead to unwanted congestion and roadways performing below their capability.

The Road Ahead

Transition from Reactive to Proactive Management of Signals. As PennDOT takes ownership of select signals, we will be stressing the importance of quickly identifying and correcting issues that hinder operations. We will also be moving towards a proactive approach of conducting preventative maintenance to ensure equipment is in good working order and identifying and correcting potential issues before they occur. A proactive operations approach will lead to better traffic flow as signal timings can be adjusted to fit changing conditions in the field.

Making the Connection. There are more than 13,500 traffic signals in Pennsylvania with approximately 4,300 of them located on key roadways. By the end of 2022, we are looking to connect an additional 300 signals to our Maxview command and control software, bringing the total to 1,000. We plan to continue the trend targeting 400 each year.



The Driver

Incorporation of Performance Data to Improve Signal Operations. Traffic signals are highly sophisticated and offer a wealth of data that can be analyzed and used to improve traffic flow.

The Road Ahead

Establishing Performance Measures. Poorly timed traffic signals are the most significant contributor of traffic congestion on arterial roadways. Automated Traffic Signal Performance Measures (ATSPM) use what’s known as “high resolution” data from signal controllers to pinpoint maintenance and operational issues at signalized intersections so that necessary improvements can be made. By the end of 2022, we will be connecting the first signal corridor to our ATSPM software.

The Driver

Maximizing Funding for Signals. The funding and operations of traffic signals has been the responsibility of the local municipality where they are located. Insufficient funding has led to many challenges and potential solutions, like PennDOT’s traffic signal ownership pilot.

The Road Ahead

Traffic Signal Grant Management. The GLG and ARLE grant programs have provided opportunities for improving traffic signal operations across the state. GLG has awarded nearly \$100 million since it began and receives up to \$40 million dollars annually for traffic signal improvements. ARLE has awarded more than \$112 million, with approximately \$13 million distributed annually. Continual improvements to these grant programs will help maximize investments in traffic signals.



**\$212 Million
Awarded through
GLG & ARLE**



TSMO Planning and Funding

The TSMO Planning & Funding Unit leads Pennsylvania's Transportation Systems Management and Operations (TSMO) program. TSMO addresses reliability, mobility, and congestion challenges by using emerging and innovative operational strategies. This program includes strategic and regional planning, along with management of funding for the deployment and maintenance of TSMO equipment. Since 2018, \$26M annually has been made available for ongoing operations and deployment of various types of TSMO projects.

Accomplishments



Development of Regional Operations Plans (ROPs)

ROPs are similar to a typical long-range planning process, but focused exclusively on TSMO projects. This data-driven process identifies key projects based on congestion and its causes. The ROPs provide a framework that can be used to fund stand-alone projects or TSMO add-ons to larger capital projects. PennDOT's Regional Operations Planning won the 2021 National Operations Center of Excellence award for Project Selection and Prioritization.

TSMO OneMap

Data-driven planning requires useable tools to help guide planners as they navigate a sea of data and information. The TSMO OneMap combines all key layers to take the guesswork and anecdotal decision making out of the ROP planning process. Once an area of interest is identified, the tool can help users understand the root cause and identify appropriate strategies from the TSMO toolbox.

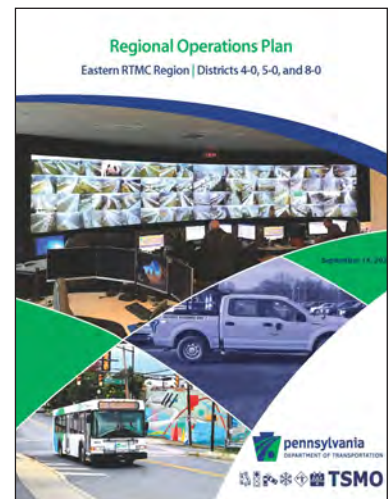
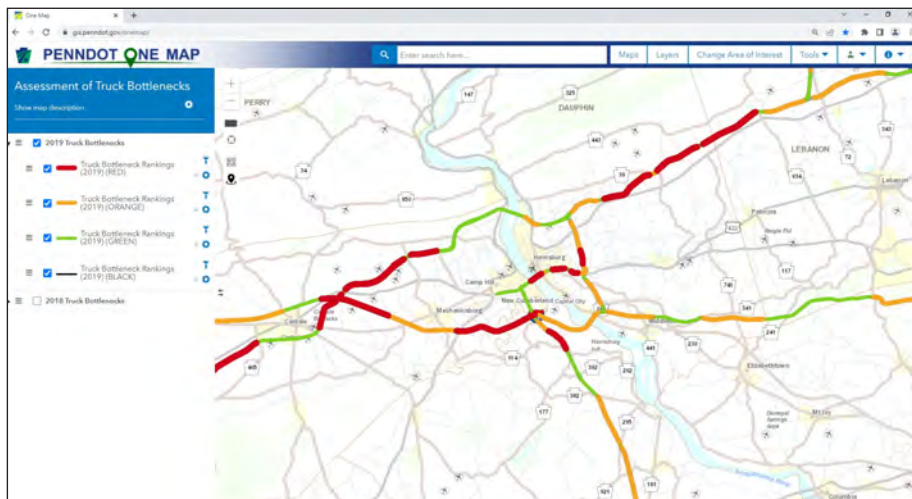
Developing Mature and Consistent Funding Programs

In recent years, dedicated funding efforts have been established to support the development and delivery of key TSMO projects. These include:

- o **TSMO Funding Initiative:** Dedicated federal funding to incentivize regional TSMO projects and advance statewide initiatives.
- o **Antiquated Funding Program:** Maintenance and Interstate TIP funding focused on the replacement of antiquated Intelligent Transportation System (ITS) devices across the state.
- o **TSMO Interstate TIP:** Interstate TIP funding allocated specifically to fill Interstate ITS Gaps, implement key TSMO projects identified in the ROPs, and support for statewide TSMO initiatives.

Fiber Backbone Plan

Over the years, project by project decisions have been made as to the type of communications needed when deploying field equipment. This has led to high recurring monthly costs, maintenance of field equipment, and incompatibilities. The plan for a statewide fiber backbone determines where future fiber will be required on construction projects and provides the specifications and requirements to ensure long-term viability.



Where We Are Going



The Driver

A Less Congested, More Reliable Network. This is the vision for PennDOT's TSMO program. Together with the mission of moving people and goods from Point A to B, as efficiently, safely, and reliably as possible, these are the key drivers for TSMO decision making.

The Road Ahead

Update Cycles for the ROPs. The Southeastern ROP will be completed to prioritize key projects in the Philadelphia metro area. ROP update cycles will be established for all regions so that strategic initiatives and key projects are regularly identified and programmed

Perform Data-Driven Planning. Identifying appropriate solutions to real-world issues is key to an effective TSMO program. In turn, this will lead to greater returns on investments. Tools will continue to be developed to improve decision making capabilities, both for ROP planning and real-time applications.

The Driver

Capability Maturity Model. The CMM is a framework to measure the effectiveness of a TSMO Program using six focus areas.

The Road Ahead

Self-Assessments. Periodic self-assessments will help guide the TSMO program by determining the areas of the Program that need to be improved so that changes can be made accordingly.

TSMO Program Plan. The Program Plan is developed through a collaboration of stakeholders to determine the best strategies for advancing along the CMM. Periodic updates of the Plan will ensure that the most appropriate strategies are moved to the top of the priority list.

The Driver

Capitalizing on Available Funding. TSMO needs are always greater than available funding. Projects must use appropriate solutions to solve a data-driven need, while maximizing the return on investment.

The Road Ahead

Perform Portfolio Management. The TSMO Program seeks to integrate TSMO projects into the overall planning and project development process. Portfolio management will include better project tracking to improve resource allocation by matching projects with available funding sources.

The Driver

Support the Statewide Fiber Network. A Commonwealth initiative is underway to develop a statewide fiber network. A dedicated fiber network will improve overall communications reliability, provide available bandwidth for use by various applications, and enhance the security of the network while allowing for future expansion.

The Road Ahead

Fiber Design and Construction. Our team will continue to support development of a statewide fiber network with polices for design and construction, along with needed contract support. From a PennDOT perspective, the statewide fiber network will support the connection between engineering districts, communications with field equipment, and integration between various applications.

Challenges



Skilled Workforce for TSMO

Operations professionals need to understand many aspects like digital tools, advanced automation software, and data management. As more TSMO strategies and business processes are powered by artificial intelligence enabling faster insights and greater efficiencies, additional challenges will continue to emerge. The TSMO workforce needs to understand these trends when identifying solutions, articulating the benefits, prioritizing projects, and requesting funding.

Competition with Traditional Transportation Projects

TSMO projects are competing with traditional Infrastructure projects (e.g., bridge replacement, highway reconstruction) for ever-limited funding. It is imperative that identifying and applying for funding opportunities and communicating the benefits of TSMO projects are part of the project development process.





Signing and Pavement Markings

The Signing and Pavement Markings Unit provides guidance for PennDOT's 1.3 million state-owned signs, while the Sign Shop manufactures and distributes approximately 80,000 traffic signs to county maintenance forces each year. The Unit also provides guidance for 114,000 miles of traffic line paint applied each year, which is enough to circle the globe nearly five times. The Unit manages more than \$18 million of yearly contracts for traffic line paint, glass beads, delineators, and sign materials, and serves as a liaison to the Pennsylvania Tourism Signing Trust.

Accomplishments



Implementation of Recessed Wet Reflective Pavement Markings

Also known as all-weather pavement markings (AWPMs), PennDOT has begun an effort to implement AWPMs for white lane lines on interstates. This effort will replace existing snowplowable raised pavement markers with a longer lasting, better performing, and safer pavement marking.

Maintaining Sign Shop During the Pandemic

Restarting the Sign Shop began with an implemented plan to ensure worker safety. Operations have continued over the past two years with no interruptions and the Sign Shop has been able to supply county maintenance forces with needed signs.

Financial Break to Logo Program Participants

Knowing the lodging and food industry suffered during the pandemic, the PA Tourism Signing Trust offered a 90-day, 3-payment installment plan in 2020 and a 50% discount on the 2021 annual fee.

Named Highway and Bridge Program

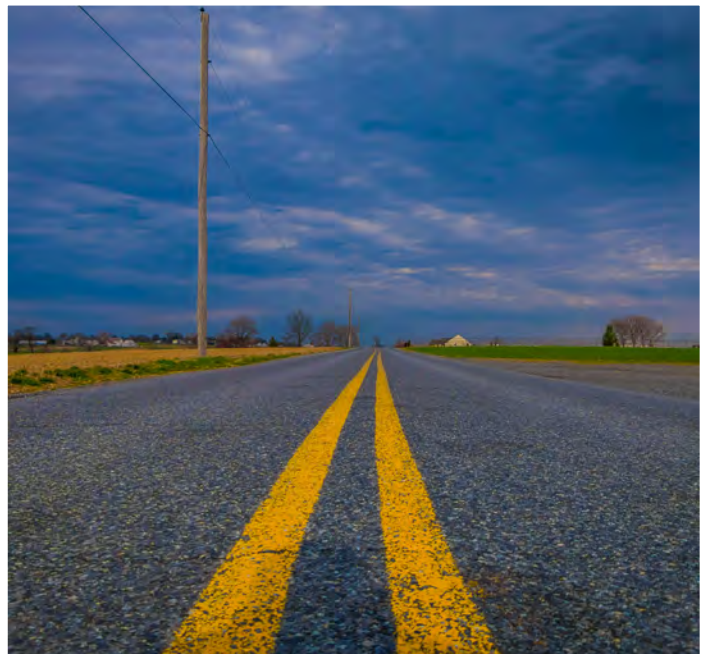
The naming of highways and bridges has grown from 10 per year to around 50 per year each of the past two years. Coordination involves monitoring from initial legislation through Governor signature, then manufacturing and installation of signs.

FHWA Outdoor Advertising Control Independent Oversight Program (IOP)

HSTO worked with Bureau of Design and Delivery on an action plan to address illegal signs, inside and outside of the right-of-way.

Keeping the Paint Flowing

The winter of 2020 brought freezing weather to Texas damaging resin manufacturing plants. 2021 saw a shortage of yellow paint. To keep districts supplied, paint was inventoried and shipments prioritized throughout the season. A similar effort was repeated in 2022 with continued raw material shortages and ongoing trucking issues.





The Driver

Available Maintenance Funding. The amount of money each county receives directly affects the amount of line painting that can be done as well as the number of old signs that can be replaced each year. Managing the programs effectively requires balancing quality and costs of materials.

The Road Ahead

Improving Sign Shop Operations. We continue to look for ways to improve Sign Shop operations, so that signs can continue to be made at costs lower than those from private sign shops.

Improved Route Planning. We will continue investigating how route planning can be used to improve operations of the pavement marking program, including adding pavement marking routes to an electronic mapping system such as Maintenance IQ. Better planning will lead to more efficient painting routes and, in turn, lower cost of installation.

The Driver

Federal Guidance and State Regulations. The Federal Manual on Uniform Traffic Control Devices (MUTCD), state legislation, and regulations are the basis for our standards and policies. It's important that our guidance stays in sync with the state and federal requirements.

The Road Ahead

Implementation of the FHWA Outdoor Advertising IOP. Approval of the Action Plan was noted in the Accomplishments. Over the next few years, we will begin implementation which will include policy updates, district training and municipal, legislative, and district outreach.

Minimum Pavement Marking Retroreflectivity. Revision 3 of the 2009 Edition of the MUTCD includes minimum retroreflectivity requirements for pavement markings. A policy similar to our 18-year sign life program will be needed for pavement marking maintenance.

The Driver

Driver Safety. Safety is our top priority, so we are always looking for ways to ensure high quality/visible signs and pavement markings on our roadways.

The Road Ahead

Replacing Signs Older than 18 Years. Creating a live link between Maintenance IQ and SAP will improve district access to information to help them better manage their 18-year sign life replacement program.

Pavement Marking Data Loggers. Data loggers will continue to be installed on all new paint trucks. Guidance will be developed on how to use them effectively to enhance marking quality and improve efficiency of operations.

The Driver

Customer Service. Our Sign Shop strives to provide a high level of customer service to counties and other state agencies that order signs. The goal is delivery within two weeks of order receipt, while accommodating rush orders for emergency signing needs.

The Road Ahead

Implement New Digital Printing Technology. Digital printing will help the Sign Shop shorten the timeframe for completing certain types of signs. Implementing the technology will also allow use by approved sign manufactures. Specifications need to be developed for how to evaluate and approve the manufacturers and their equipment used for digital printing.

Challenges



Funding for New Sign Shop

A new sign shop used to be on the priority list, but it has taken a back seat in recent years to other department-owned building priorities. There is currently no timeframe for a Sign Shop replacement as repairs are made to keep existing buildings operational. The existing storage building is inefficient requiring sign blanks to be stored horizontally on the floor vs stacked vertically on racking. The art room has no space to accommodate a digital printer.

Quantity vs. Quality

There is often a mentality of quantity over quality in the Department's line painting program. A push for crews to paint faster and more line miles in a day can lead to a poorer quality line that wears out before it can be reapplied next year.

Limited Maintenance Funding

The amount of maintenance funding limits how many signs can be replaced in a year or how many roads can be painted. While this is a driver for our unit to manage material costs, it is also a challenge in keeping roads painted and signs replaced.

Everyone Wants a Sign

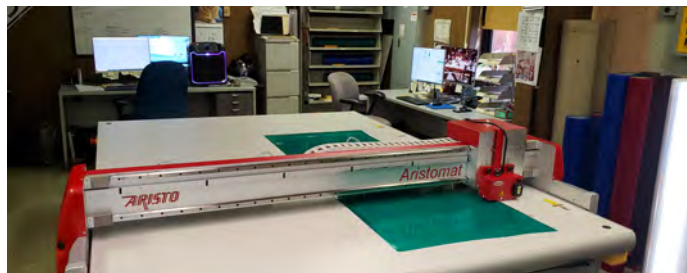
We receive many requests to install signs inside the right-of-way. Our position is to limit signs in the right-of-way to those that are approved in our standards and policies. Any variation makes it more difficult to deny future signing requests.

COVID's Effect on Products and Pricing

COVID has affected many areas of the Department including availability of materials, products now difficult to obtain, and significant spikes in pricing. In 2021, there were glass bead and waterborne paint shortages. Vendors are no longer renewing on multi-year contracts due to pricing volatility, resulting in single-year vs five-year contracts.

Personnel Shortages

District line painting crews are having a difficult time hiring and keeping employees on the crews. Some districts have been unable to operate two trucks for the entire line painting season over the past two years, resulting in lower number of line miles painted.





Highway Occupancy Permits

The Highway Occupancy Permits (HOP) Unit provides the districts and applicants with the tools needed to efficiently navigate the highway occupancy permit process. The goal is ensuring that driveways, local roads, and utilities are installed and maintained in a safe manner.

Accomplishments



Development of Sample HOP Plans

These sample plans help streamline the HOP process by providing applicants with a reference showing all the information needed for their own set of plans that accompany an HOP application. A well-thought out and complete application will lead to less comments and quicker turn-around.

TIS/TIA Review and HOP Project Application Checklist Update

Found in Publication 282, the HOP Transportation Impact Study (TIS)/Transportation Impact Assessment (TIA) Review Checklist and HOP Driveway Checklists help streamline the HOP application process and clarify applicant requirements for low-, medium-, and high-volume driveway occupancy permits. Like the sample plans, the intent is more complete HOP applications to minimize the number of reviews required by Department personnel.

HOP Quick Reference Guide

Publication 819 provides a quick reference explaining “who” can apply for a driveway HOP. Printed as a brochure it can be provided to property owners and HOP applicants detailing their roles and legal rights during the HOP process.

Documenting the HOP Owner/Signature Process

As a companion to the HOP Quick Reference Guide, Publication 819A provides a flowchart documenting the steps required for the HOP driveway application signature process.

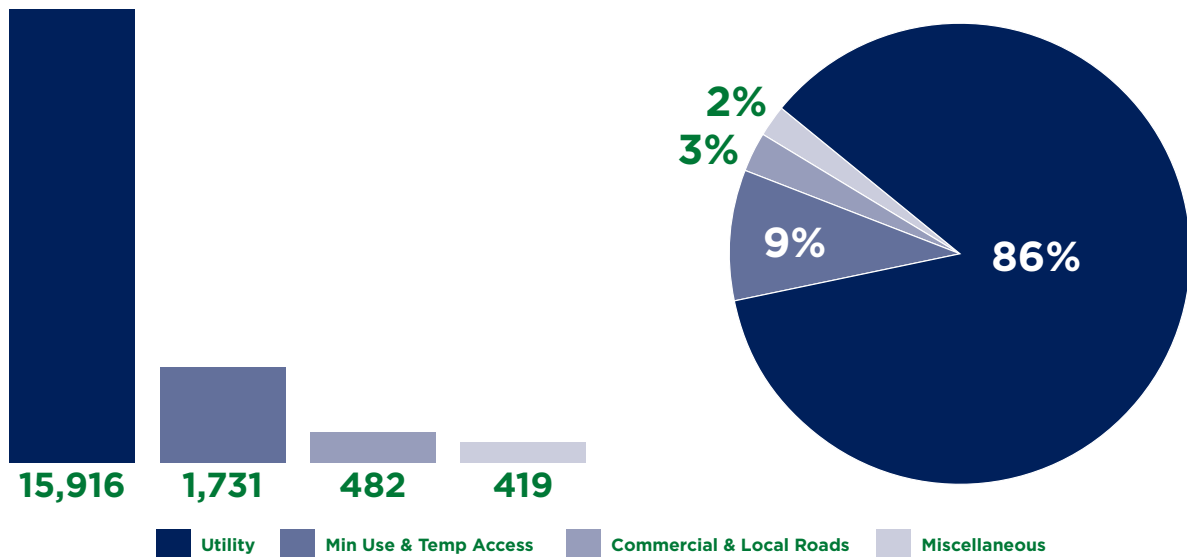
Credit Card Option for ePermitting

This highly desired enhancement added the option of paying permit and inspection fees by credit card.

Keeping Permits Moving During a Pandemic

Permits continued throughout the COVID pandemic. One of the keys was the addition of Virtual Inspections. Working with District 6, permittees were able to provide daily virtual inspections of their construction activities. Documentation included photos of work performed, daily log of activities, material certifications, test results, and other information documenting proper restoration of the highway.

HOPs Issued in 2021





The Driver

Providing High-Quality Customer Service. HOPs and bridge occupancy license applications are reviewed on a first-come, first-served basis. By statute, certain applications must be reviewed within 60 calendar days but PennDOT policy looks for completion of all application reviews within 30 days.

The Road Ahead

Improved Efficiency and Consistency. Development of a QA Program will help monitor, educate, and improve the HOP application review process. The inclusion of a statutory/regulatory/policy source reference with review comments will ensure applicants have a clear understanding of “why” the comment was made. The goal is improved efficiencies and consistency between districts.

Incorporate Feedback. Internal and external customers often provide feedback on suggestions for improving the HOP process. The HOP Manual (Publication 282) will be updated to incorporate feedback and changes to policies and procedures since the 2018 edition of the manual.

Educating on ePermitting. Better guidance on navigating the ePermitting System (EPS) will be provided to system users.

The Driver

Ensuring Safety and Good Access Management. Proper sight distance is vital to ensuring safety when access to our roadways is permitted. Structural integrity of the highway, economy of maintenance, proper drainage, and safe and convenient passage of traffic are also all critical elements of a successful HOP program.

The Road Ahead

Align with AASHTO Sight Distance Criteria. Our current sight distance criteria is outdated and needs to be updated to align with national standards.

Update Driveway Regulations. 67 Pa Code, Chapter 441 governs access to highways by driveways and local roads. An update is needed to comply with order requirements from the Independent Regulatory Review Commission (IRRC), and to address sections that are obsolete or conflict with statute. The update will also make corrections to sight distance requirements, add traffic impact study requirements, and increase permit fees.

Provide Access Management Training. Training is needed in a variety of areas to better address safety and access management. This includes topics like sight distance, TIS Guidelines, and requirements of the Americans with Disabilities Act (ADA).



Challenges



Inconsistencies

There are currently variations in permit review times between districts. The HOP program strives to attain consistency statewide by educating and updating policy guidance.

Regulatory Updates

Chapters 441 (Driveways and Local Roads) and 459 (Utilities) of Title 67 need significant updates. These efforts have stalled due to other higher priority regulatory updates for the Department, as well as other more time sensitive needs in the HOP program area.





Special Hauling Permits

The Special Hauling Permit Unit, which includes the Central Permit Office (CPO), oversees the issuance of nearly 400,000 oversized and overweight hauling permits each year. Analysis of these permit applications prevents damage to critical infrastructure and works to ensure safe interaction with the traveling public.

Accomplishments



Development of APRAS Modernization

The public-facing Automated Permit Routing/Analysis System was completely redone and modernized to be a map-based system. With APRAS Mod in place, the majority of special hauling permits can now be issued within seconds.

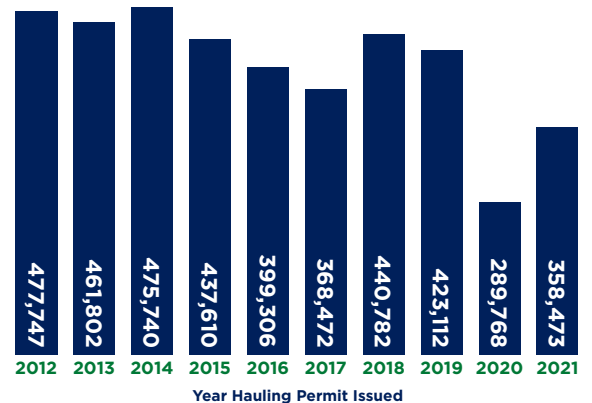
Completion of Major Super Load Movements



The CPO oversaw the successful movement of two major super load movements over the past few years. In December 2019, an industrial paper dryer was moved from the Port of Erie to Lock Haven. This load was 628,000 lbs, 217 feet long, and 20 feet wide. More recently, a section of naval research equipment measuring 213 feet long and weighing 294 tons was moved from the New York state line to Lawrence County. The load traveled along numerous state routes through 9 counties on its more than 400-mile journey in January 2022. Both movements involved extensive planning and coordination, took multiple days to complete, and brought extensive media attention.



Total Number of Hauling Permits Issued by Year



Where We Are Going



The Driver

Preventing Damage to PennDOT's Infrastructure. Loads traveling above legal size and weight limits can shorten the lifespan of roadways, exceed the allowable weight of bridges, and lead to other challenges resulting from roadway geometrics.

The Road Ahead

Establishing a Plan for Size and Weight Enforcement Facilities. Understanding all locations used by Pennsylvania State Police (PSP) mobile weigh teams and their current condition, PennDOT and PSP can work together to prioritize maintenance and upgrades necessary for the safety and efficiency of key locations.

The Driver

Using Data to Improve Enforcement Operations. Data is available from a variety of sources to show information like truck volumes and overweight vehicles at varying times of the day.

The Road Ahead

Establishing Tools for the Trade. PennDOT has the expertise to combine the sources of data to identify the best locations and times of the day for PSP to conduct enforcement activities. This will help maximize the limited funding available for enforcement operations.

The Driver

The State Enforcement Plan is developed annually for the FHWA by the PSP in partnership with the PennDOT. The plan details specific commercial vehicle size and weight enforcement resources, actions, and goals for both agencies to protect roads and bridges statewide.

The Road Ahead

Expanding the Partnership with the PSP. This partnership will look at data analysis opportunities, size and weight enforcement technology enhancements, and actions outlined in the State Enforcement Plan. These efforts can help PSP optimize their overall size and weight enforcement program, and drive investments to meet the goals of the Plan.

The Driver

Enhanced Customer Service. The Central Permit Office is an important connection between PennDOT and the trucking industry, so it's vital that we maintain a high-level of customer service.

The Road Ahead

Continued Modernization of APRAS. We will look for ways to continually improve APRAS so that it provides exceptional customer service for haulers and an efficient work environment for department users. Future enhancements will account for feedback from both internal and external users and look to align APRAS with other states' systems to allow for better harmonization between states.

Update PA 67 § 179 (Oversize and Overweight Loads and Vehicles). Updating this regulation is necessary to bring it in alignment with changes to the PA Vehicle Code, special hauling policy, and other key APRAS requirements.

Challenges



Keeping Policy in Lock-step with the Law

This can be difficult as the timeframes for completion of policies and law can vary widely. We will continue to work closely with haulers as we update policies and develop potential legislation to accommodate industry needs, while working to minimizing impact on infrastructure and safety.

Managing New Transportation Technologies

As freight moves toward autonomous vehicles and other evolving technologies, we need to find ways of incorporating the vehicles into oversize and overweight permitting while ensuring the infrastructure remains protected.





Safety Engineering and Risk Management

The Safety Engineering and Risk Management Unit oversees the Highway Safety Improvement Program (HSIP) and its \$135 million in federal and state funding. The safety engineering side provides tools and analysis for safety partners to quantify the safety impacts of potential projects. The risk management portion of the Unit partners with the Office of the Attorney General and the Department of General Services to develop strategies for reducing the Department's liability for legal claims and torts.

Accomplishments



Encouraging Local Road Safety

HSIP guidelines were updated to make it easier for local municipalities to purchase pavement markings and signs for safety improvements by their municipal road crews.

HSIP Safety Project Evaluations

The performance of every HSIP-funded safety project from 2003 to 2018 was evaluated. The resulting Implementation Plan provided an overview of noteworthy practices and areas for improvement.

Evaluation of Countermeasures

High tension cable median barriers, adaptive traffic signal controllers, high friction surface treatments, and other countermeasures were evaluated across the state. We learned which countermeasures are working, which need improvements, and which should no longer be pursued. State-specific Crash Modification Factors were established for multiple countermeasures.

Improving Vulnerable User Safety

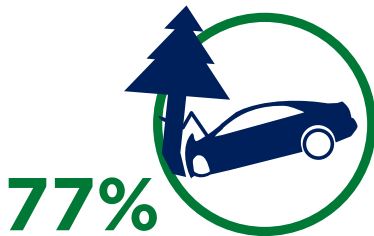
Research efforts of tort settlements identified areas where the Department can better mitigate road issues for pedestrians, bicyclists, and other vulnerable users.

Enhancing Network Screening

New Highway Safety Network Screening was developed for every county in the state. This includes thousands of urban and rural segments and intersections.

Charting the Course for Highway Safety

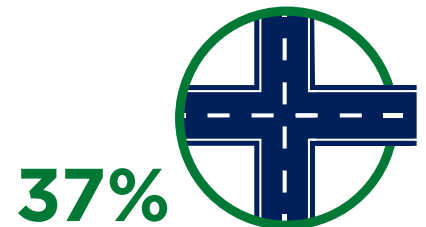
The new 2022 Strategic Highway Safety Plan (SHSP) details the Commonwealth's blueprint to reduce fatal and serious injury crashes over the next five years.



of lane departure fatalities and serious injuries involved hitting fixed objects.



of all pedestrian crashes occur at intersections.



of all intersection fatalities occurred at signalized intersections and 31% occurred at stop controlled intersections.



The Driver

Strategic Highway Safety Plan. The updated SHSP identifies lane departure crashes and pedestrian safety as two of the three Priority Emphasis Areas.

The Road Ahead

New District Highway Safety Plans. To coincide with the updated SHSP, District Highway Safety Plans will be developed for each engineering district. Consultant support will ensure consistency, maximize the use of available data, and work to ensure quality safety projects are identified and deployed in the coming years.

Making Safety an Important Aspect of Department Projects. Working closely with Districts, planning partners, and municipalities will provide opportunities to implement more proven countermeasures and complete data-driven safety assessments. Safety can be both a driver for a project as well as an opportunity to enhance a project with safety countermeasures. There are opportunities to better use network screening and identify projects with greater returns on investment.

Implementing Systemic Safety Countermeasures. Data-driven safety assessments will be used to implement proven systemic safety countermeasures at locations identified as “high-risk” for lane departure crashes or pedestrian safety issues.

The Driver

HSIP Implementation Plan. The US Code requires development of an HSIP Implementation Plan whenever a state does not meet two of the five federal safety metric targets.

The Road Ahead

More Systemic Safety Projects. Systemic safety projects can offer a 7x better return on investment than spot-specific projects. They are also often quicker to deploy and address multiple locations. The deployment of more systemic safety projects will help Pennsylvania maximize our investment towards reducing fatalities and serious injuries.

The Driver

Infrastructure and Investment Jobs Act. The IIJA increases the amount of funding available for highway safety improvements.

The Road Ahead

Additional Safety Projects. We will work with our partners to identify additional safety improvement projects. The focus is reducing fatalities and serious injuries while selecting projects that provide a good return on investment.

Targeting Funding. While the IIJA increased funding, it also includes metrics requiring HSIP funds to be obligated in specific ways. The new vulnerable road user (VRU) rule requires that 15% or more of HSIP funds be used for VRU projects if VRU fatalities make up 15% or more of the total highway fatalities.

The Driver

Tort Liability Claims and Settlement Payouts. Tort liability claims involving PennDOT highways cost the Commonwealth millions of dollars each year.

The Road Ahead

Use Claims and Settlement Data. Working with the Office of Attorney General and the Department of General Services' Bureau of Finance and Risk Management, we will use tort settlements and claims records to determine risk areas, reduce the liability of the Commonwealth's highway system, and make our roadways safer.

Challenges



Data Collection and Integration

An aggressive data-driven safety program requires fresh data, and a lot of it. This also includes the additional challenge of integrating data from many different resources in a timely manner.





Crash Analysis

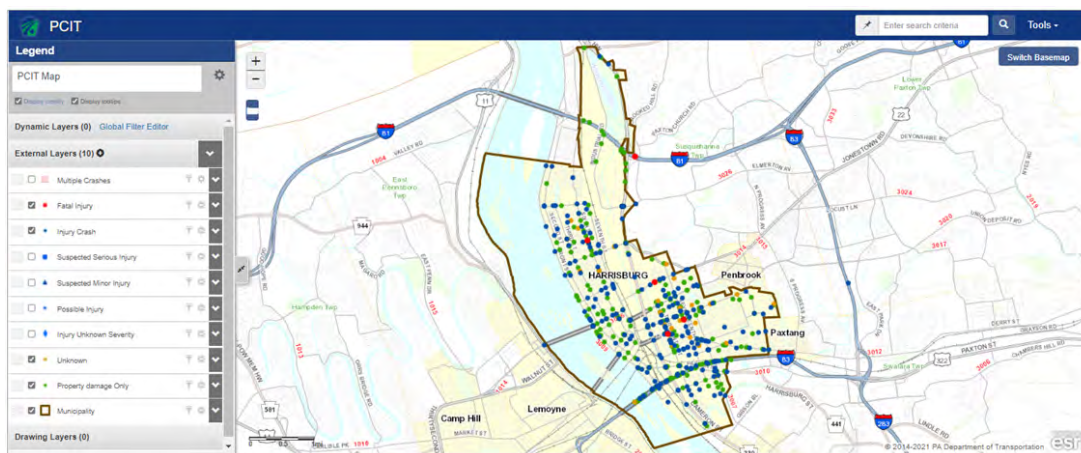
The Crash Information Systems and Analysis Unit (Crash Unit) creates roughly 130,000 crash report records a year and provides crash data to PennDOT staff and a wide-range of stakeholders including planning partners, local municipalities and police, the Pennsylvania State Police, safety researchers, and the general public. This crash information is instrumental for PennDOT's behavioral and engineering safety programs.

Accomplishments



Development of the Pennsylvania Crash Information Tool (PCIT)

PCIT is an online crash website that allows users to understand where and how crashes occur. The tool has been recognized by other states as a model for sharing crash information. The website also includes a restricted area that is tailored to specific needs of our partner organizations.



Timely Completion of Crash Records

To offset recent staff shortages and vacancies, the Crash Unit devised strategies to ensure the timely completion of crash data. This included the addition of experienced annuitants, use of a NHTSA grant for overtime, enlisting the help of former staff working in other areas of the Department, and other strategies to increase efficiency.

Big Data, Improved Knowledge

With the creation of PCIT, staff resource savings have been used to expand the data knowledge of the Unit. “Big data” is the term used to describe combining external datasets with crash datasets to learn more about how to enhance safety. We have recently acquired School District Driver Education data from the Department of Education and are working to determine if on-road training is important to reducing young driver crashes.

Enhancing Automatic Crash Case Processing

Crash reports include nearly 400 validation rules designed to correct errors and ensure accurate crash information is captured and reported. The Crash Unit assesses each submitted report to analyze why cases do not automatically pass edits and then look for ways to enhance efficiencies. Getting cases to fulfill all 400 validation rules bypass the need for staff interaction when reports are received. Over the past year, this effort has resulted in 5,000 additional cases not requiring human interaction.

The Dispatch: A Police Quarterly Newsletter

We have found an ever increasing need to improve communications and share information with the police who submit crash reports. A quarterly newsletter was recently developed, with assistance from PennDOT’s Communications Office, and will serve as a complimentary piece to other communication tools already in place.

Adaptable and Responsive Crash Form

The police crash form is now reevaluated and modified every two years to be responsive to new laws and the current data needs of the safety community. This effort, which began in 2016, helps the Department achieve greater compliance with the national crash data standard (MMUCC).

Where We Are Going



The Driver

Strategic Highway Safety Plan (SHSP). The 2022 Update of the Strategic Highway Safety Plan (SHSP) Identifies Traffic Records Data as a Priority Emphasis Area.

The Road Ahead

Implement Integration of Traffic Records Databases. Combining crash data with other data sets helps us discover why crashes are occurring. This will then lead to greater knowledge and improved strategies for reducing fatalities and serious injuries.

The Driver

Bipartisan Infrastructure Law (IIJA). There are new funds potentially available for state crash programs. If Pennsylvania qualifies, there may be additional funding available to accommodate needed system and functional improvements to our crash reporting system.

The Road Ahead

Implement a Crash Reporting System (CRS) Validation Rules Engine. This tool would place the 400 CRS validation edits into a database for easier modification and adjustment. Rules, or their descriptors, could then be modified without requiring IT resources and system releases.

Reduce or Eliminate a Backlog of Necessary CRS System Changes and Updates. There are currently more than 100 pending changes to the CRS, without sufficient IT resources to handle the needs. In the upcoming years, we will explore funding opportunities to help supplement the needed IT resources.

The Driver

Stabilization of Unit Staff. There have been numerous staff changes and departures over the past year. The stabilization of the Unit is critical for growth, especially in the IT and Leadership positions.

The Road Ahead

Better Tools for Staff. Internal resources like various manuals and publications will be updated to make them current and easier to understand. Short training videos will be developed for quick reference. A repository for capturing existing programs will help eliminate duplication as new tools are developed.

Improved Recruiting and Retention. The work done by the Crash Unit varies significantly from work done by others in the same classifications across the state. A focus will be made to clarify the duties when job vacancies are posted, and more appropriate working titles will be developed for staff working in the Unit



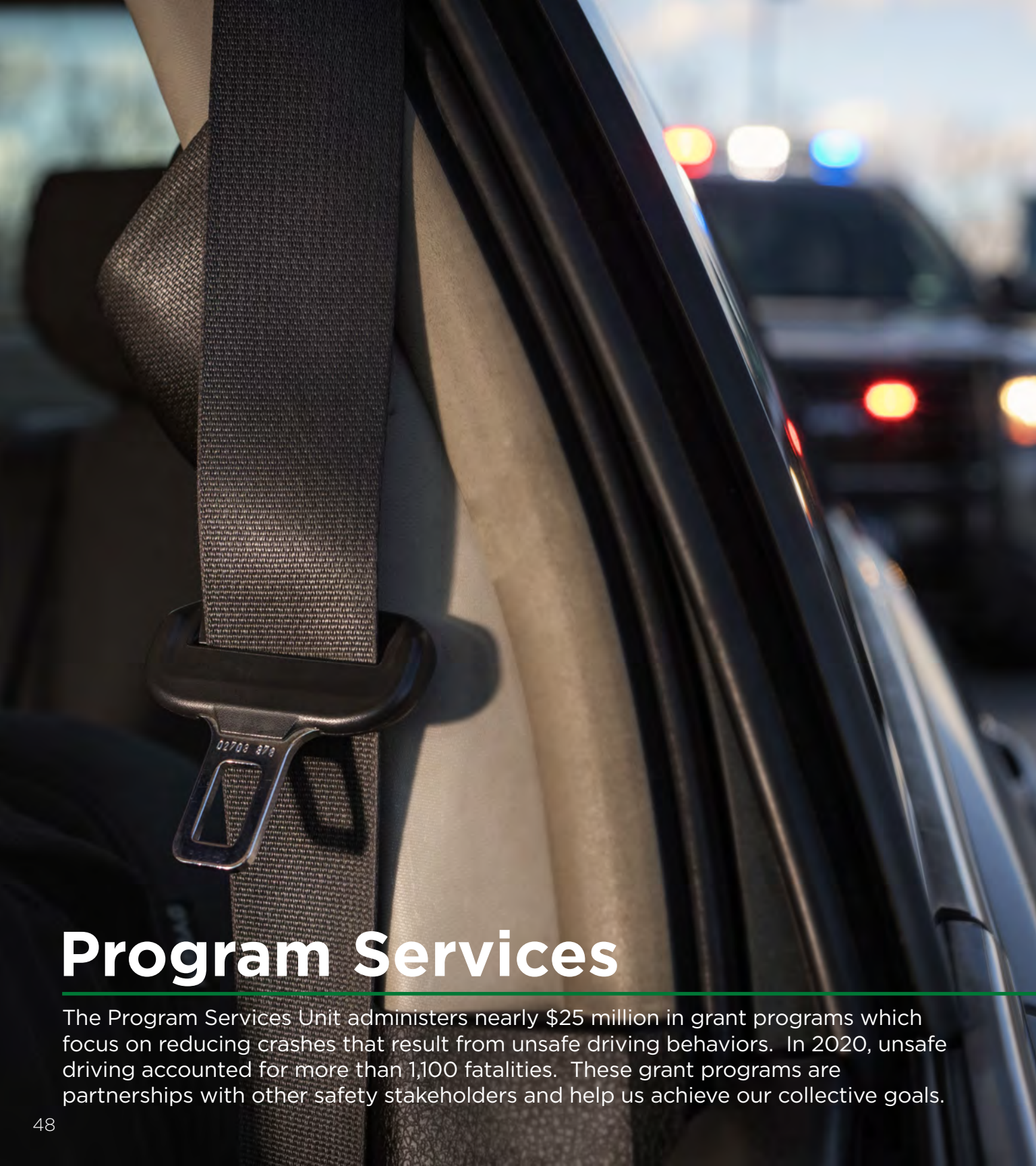
Challenges



Staffing
The Crash Unit has experienced many staffing changes over the last few years, with the remaining “pillars” of knowledge approaching the ends of their careers. Ensuring documentation and informational transfer will be critical for the continued success of the Unit.

IT Systems Funding
As more PennDOT systems are built, less resources are being provided for existing systems. Finding and obtaining external funds are becoming critical to ensure the ability to readily adapt to support our safety groups and partners.





Program Services

The Program Services Unit administers nearly \$25 million in grant programs which focus on reducing crashes that result from unsafe driving behaviors. In 2020, unsafe driving accounted for more than 1,100 fatalities. These grant programs are partnerships with other safety stakeholders and help us achieve our collective goals.

Accomplishments



Be Safe PA

PennDOT's new safety campaign "Be Safe PA" received national recognition, including the AASHTO TransComm award for Print and Electronic Marketing. The campaign includes posters and videos focusing on distracted driving, seat belt usage, and impaired driving.

Highest Level of Seat Belt Usage

We have recently reached an all-time high for seat belt usage of 89.5%. Continued educational outreach efforts are having a positive effect on the younger generation which helps contribute to achieving this number.

National Organization Leadership

Tom Glass, Highway Safety Section Chief, became Chair of GHSA's newly established Governance Committee. Christy Timbrell, Highway Safety Outreach Programs Manager, was elected Secretary of the National Association of Women Highway Safety Leaders, Inc. (NAWHSL).

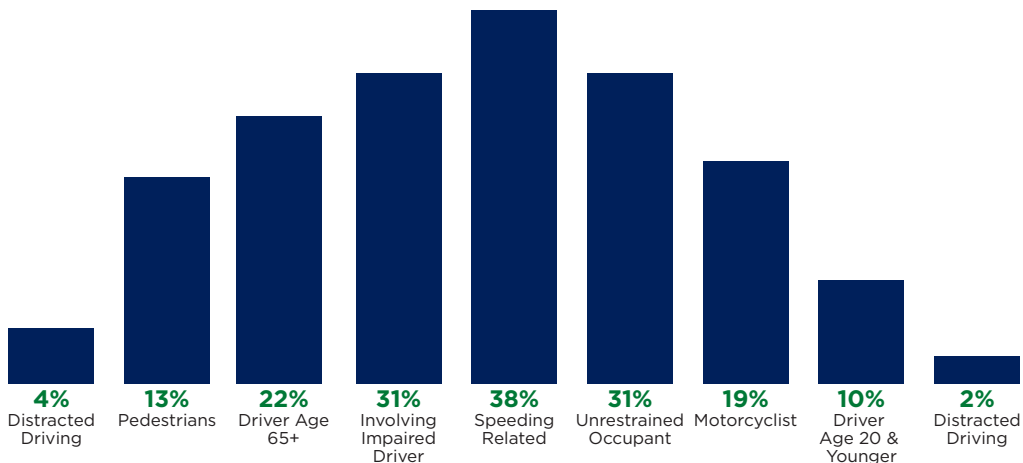
Positive NHTSA Assessments

Two recent federal program assessments and a triennial management review from NHSTA have continued the 15+ year trend of no regulatory findings for Pennsylvania.



Contributing Elements to the 2020 Fatalities

(Behavioral and Enforcement Related to Safety Focus Areas)



Accomplishments



Improved Data-driven Funding Allocation for Our Community Traffic Safety Program

This “data-driven focus” has helped the Program be more representative of the communities served and worked to ensure that funding for the community will be consistently available from year to year.

Consolidation and Leveraging of Grants

By consolidating existing grants and leveraging ones from other departments, we’ve been able to reduce the number of grants our partners need to manage and administer. This allows them more time to focus on delivering key services.

Redefined Grant Liaison Team

Redefining the roles of our grant liaison team have improved law enforcements’ ability to participate in and administer grants through data analysis and planning support.

Development of Pedestrian Safety Enforcement Campaigns

This new countermeasure raises awareness of pedestrian-related traffic laws through highly publicized activities at crosswalks with local media and community outreach coordinators.

Focus on Vulnerable Users

Bicycle Safety outreach videos were developed to focus on the needs of our vulnerable user community.



Where We Are Going

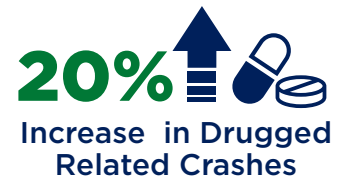


The Driver

The 2022 Update of The Strategic Highway Safety Plan identifies Speeding and Impaired Driving as priority emphasis areas for targeting behavioral safety investments.



Alcohol-Related Crashes
Each Day in 2020



The Road Ahead

Improve Traffic Safety-Related Enforcement Training. This includes increased access to training courses, new tools to support data-driven resource deployment, and updates on case law and operational best practices. Under our grant programs, police will have a greater ability to reduce speeding and impaired driving on roadways.

Promote And Continue Development of The “Be Safe Pa” Campaign. Sustaining and building upon the success of the campaign will further broaden the reach, impact, and return on investments.

The Driver

Bipartisan Infrastructure Law. Pennsylvania’s share of federal behavioral traffic safety funding is expected to increase by roughly 20% under the law.

The Road Ahead

Align Programming with New Federal Funding Requirements. Ensuring alignment will position us for access to these new federal funds.

Engage the PennDOT Safety Advisory Committee. This committee can help identify projects and other support to reduce administrative burdens.



The Driver

NHTSA Triennial Management Review of the Pa Highway Safety Program. The review identified recommendations to improve grant program administration and our ability to address complex and diverse traffic safety issues.

The Road Ahead

Expand Partnerships and Strengthen Coalitions. This will help broaden and diversify program planning and implementation.

Further Integrate Data Analyses. Using a data-driven project development process ensures resources are allocated to where they are most needed.

Strengthen Grant Outcome Evaluations. These evaluations more accurately assess the impact of program investments.

Challenges

No program is without challenges, and we expect to face these in the coming years:

Sustaining Gains in Locations that have Successfully Driven Down Crashes. The goal is reaching the point where a data-driven funding allocation is no longer needed.

Balancing Deployment of Proven Countermeasures. Sustaining proven countermeasures, like traffic enforcement, while investing in new and innovative ideas.



The Highway Safety and Traffic Operations RoadMap highlights some of the great work and ideas of the many dedicated staff of the HSTO Division. Together, we will continue working to reduce fatalities and serious injuries, while striving for a less congested road network.

To learn more, please reach out to us at HSTO@pa.gov.