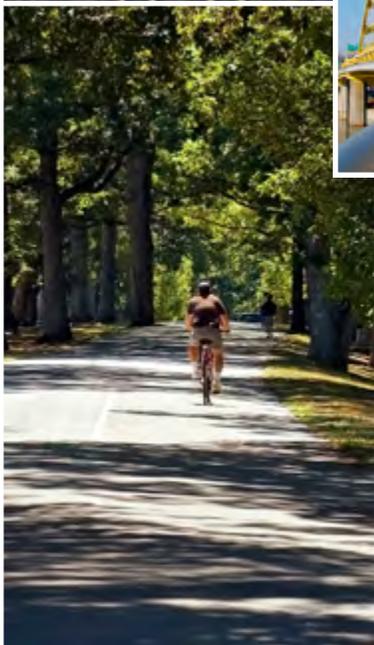




PA On Track

PA'S LONG RANGE TRANSPORTATION &
COMPREHENSIVE FREIGHT MOVEMENT PLAN

LONG RANGE TRANSPORTATION PLAN EXECUTIVE SUMMARY





*"By failing to prepare,
you are preparing to fail."*

-- Benjamin Franklin



Long Range Transportation Plan Executive Summary

PLANNING CONTEXT

Planning for Pennsylvania’s transportation assets requires a recognition of the magnitude and condition of the system and the needs of its many user groups, including students, seniors, workers, tourists, shippers, receivers, and persons with disabilities.

12.7 MILLION Pennsylvania is the nation’s sixth-most populous state, generating enormous demands on its transportation system		4,019 State bridges (>8’) that are structurally deficient (15.8% of total)		5,095 Miles of railroad track, operated by more than 60 railroads— Pennsylvania ranks first nationally in the total number of railroads	
120,000 Linear miles of roadway (state and locally owned)		25% Share of Pennsylvania’s population over age 65, in 2040		4.3% Share of Pennsylvania’s workers who walk or bicycle to work (2012)	
131 Number of public use airport facilities		2,218 Local bridges (>20’) that are structurally deficient (35% of total)		17 Locks and dams on the Ohio, Monongahela, and Allegheny rivers	
275 MILLION Miles of daily travel on all Pennsylvania roadways		124,000 Reportable highway crashes (2013)		440+ MILLION Annual fixed-route public transportation ridership (SFY 2012-13)	
1.4 MILLION Annual passengers on Amtrak’s <i>Keystone</i> service (2014)		14,000+ Traffic signals		867 MILLION Tons of truck freight moving in, within, out, and through Pennsylvania (2011)	

Pennsylvania recently adopted a funding plan to invest billions of dollars into our transportation system—this critical investment is already creating new jobs and spurring economic development across the state. To guide that investment, Pennsylvania requires a long range transportation plan (LRTP) and a comprehensive freight movement plan that are innovative and performance-based and that establish the best transportation priorities to move our economy forward and address the needs of our citizenry.

These plans, collectively known as PA On Track, have been developed with the cooperation of dozens of state, regional, and local government agencies; the perspectives of Keystone State businesses large and small; and the input of Pennsylvanians from all parts of the state. PA On Track sets goal areas that include system preservation, safety, personal and freight mobility, and stewardship. The LRTP challenges us to move in a bold direction over the next 25 years and focuses on the strategies and tools that will help us remain “on track” in meeting the goals we have set.

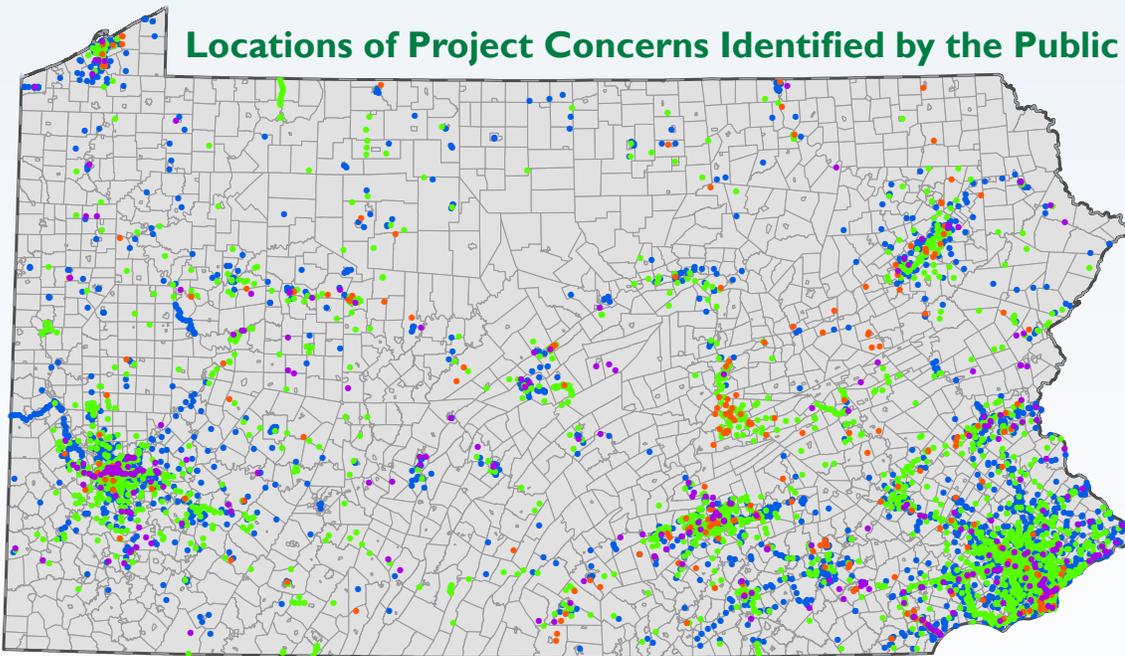
Today, Pennsylvania is served by an extensive but aging transportation system. A growing economy demands we modernize and innovate this system – to make it safer for all users; increase the use of technology; increase transit and bicycling opportunities; and move freight on our roads, railroads, and through our ports more efficiently – all while preserving our system in a state of good repair.

OUTREACH SUMMARY

PA On Track was developed with an unprecedented level of support from its partners, transportation stakeholders, and the public:

- **PAonTrack.com** – The project website served as a clearinghouse for all information related to the planning process.
- **Webinars** – A total of nine project webinars included more than 600 participants in the Plan’s development.
- **Steering Committee** – The Plan was served by a team that provided feedback on draft planning products. Additionally, the planning process leveraged many of Pennsylvania’s transportation planning and policy bodies to communicate progress and build momentum for Plan implementation.
- **Key Stakeholder Interviews** – Major shippers and receivers from around Pennsylvania were interviewed to ensure that Pennsylvania’s freight interests were properly recognized.
- **MetroQuest** – This web-based, interactive tool collected more than 3,700 discrete website visits. Nearly 7,000 points of information were provided on an interactive map (*below*) identifying transportation issues and concerns.
- **Public Comment Period** – During the Plan’s 30-day public review and comment period, more than 600 comments were received and considered as the LRTP was being finalized.

Locations of Project Concerns Identified by the Public



The LRTP does not represent the finish line—it should be viewed as part of an ongoing process... another component of the Commonwealth’s continuous efforts at communicating with its constituents.

- **Freight (235 Comments)**
- **Highways / Traffic (2778 Comments)**
- **Transit / BikePed / Bridge (3391 Comments)**
- **Other (310 Comments)**

Total Number of PA Comments: 6714

Source: PA On Track MetroQuest Survey, 2014

FINDINGS (TRENDS & ISSUES AFFECTING TRANSPORTATION)

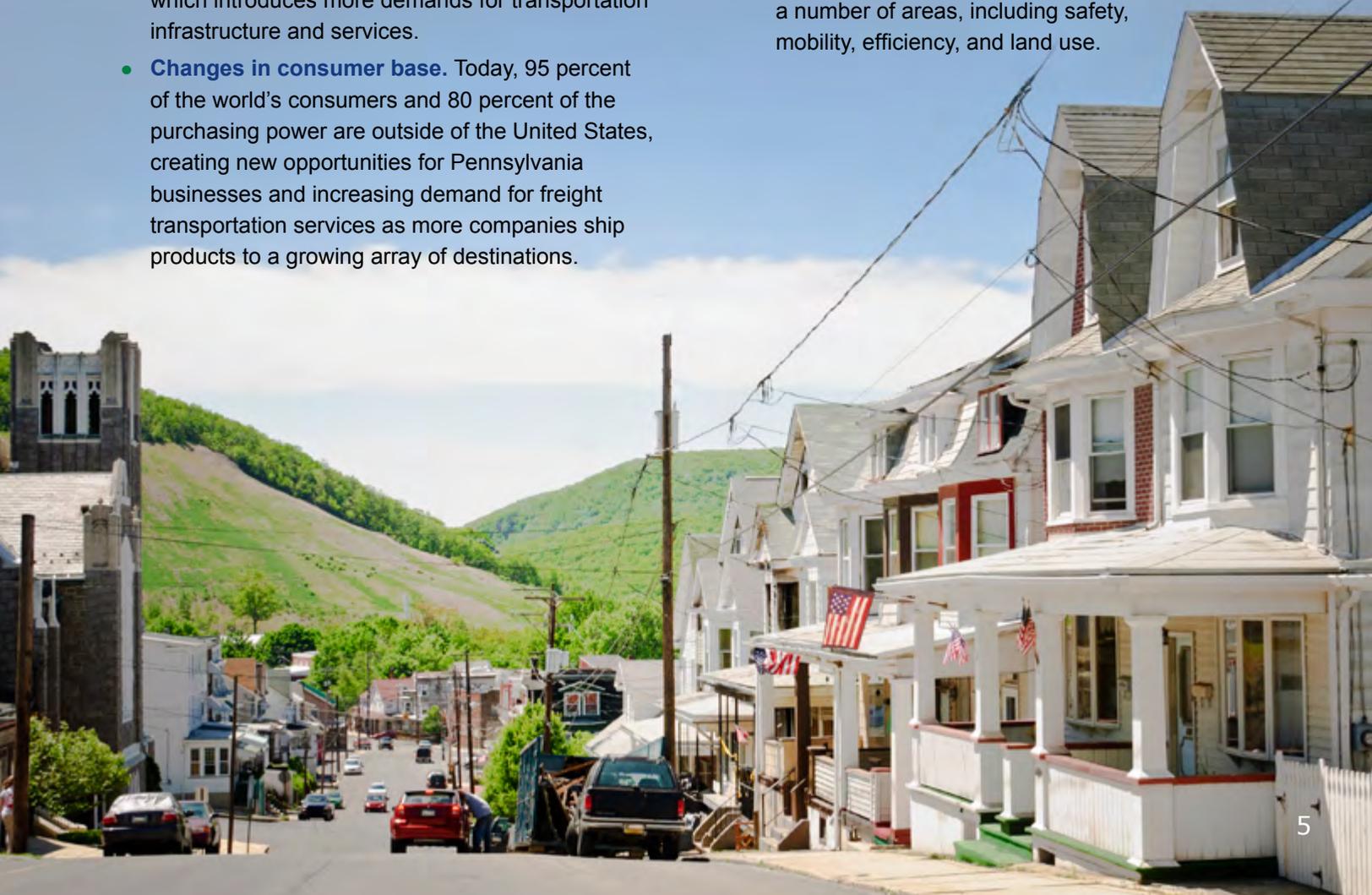
The Pennsylvania General Assembly provided the state with a much-needed boost in transportation funding through Act 89 of 2013. While proposals have been put forth to strengthen federal funding for transportation, the most likely scenario is for future federal funding for Pennsylvania to remain flat. Moreover, our reliance on the gasoline tax, coupled with increasing fuel efficiency standards and declining vehicle miles traveled will continue to reduce available revenues for transportation.

Transportation investment needs are driven by a variety of demographic and land use trends:

- **Safety concerns.** Pennsylvania has experienced a downward trend in highway fatalities over the past 10 years. PennDOT is committed toward pursuing its aggressive highway safety goals that aim to reduce fatalities and injuries by half over the next two decades.
- **Changes in land use patterns.** Pennsylvania's population continues to shift from its urban cores (cities and boroughs) to outlying suburban areas, which introduces more demands for transportation infrastructure and services.
- **Changes in consumer base.** Today, 95 percent of the world's consumers and 80 percent of the purchasing power are outside of the United States, creating new opportunities for Pennsylvania businesses and increasing demand for freight transportation services as more companies ship products to a growing array of destinations.

Transportation investment needs are also driven by technology and industry trends:

- **Increasing role of technology.** Technology impacting transportation can include innovations such as solar pavement, mobile phone apps for ridesharing and real time public transportation schedules, and refillable public transportation fare cards. Transponders and infrastructure for electronic tolling and congestion-based road pricing will likely have a significant impact on financing. Ongoing innovations in these and other technologies offer the possibility of significant benefits to social welfare and the overall traveler experience.
- **Role of connected and autonomous vehicles.** Connected and autonomous vehicles have the potential to revolutionize transportation and land use, much as the automobile did a century ago. While the timing of when connected and autonomous technology will be fully incorporated into all motor vehicles is subject to debate, Pennsylvania needs to actively plan for a future involving these vehicles, which will affect surface transportation across a number of areas, including safety, mobility, efficiency, and land use.



Transportation investment needs are driven by many factors that influence economic competitiveness:

- **Companies today depend more than ever on an integrated, agile, and efficient freight network.** The transportation system must connect them to customers in a growing number of markets around the world. Reliability, speed to market, and transportation costs impact their ability to compete. Transportation concerns are among the top site selection criteria cited by companies planning to expand or relocate; highway accessibility consistently ranks first or second.
- **Global trade will continue to play a significant role in the state’s economy.** Demand for U.S. goods is projected to increase for key Pennsylvania industry sectors, including coal, oil, and gas.
- **Pennsylvania is a major player in energy production because of the Marcellus and Utica shale formations.** Shale gas development seriously impacts roads, bridges, and rail lines in the primarily rural counties where most of this activity occurs.

- **Manufacturing remains a major contributor to the state’s economy.** Pennsylvania is the sixth largest manufacturing state, and manufacturing accounts for over 12 percent of gross state product. Manufacturing jobs have increased every year since 2010, spurred by low-cost, abundant energy as a result of the state’s natural gas production. Central Pennsylvania also leads the world in powdered metals manufacturing.
- **The state is a global leader in life sciences.** Pennsylvania ranks fourth in U.S. life sciences patents for new drugs and vaccines, diagnostic tools, and medical devices and was fourth in research funding from the National Institutes of Health in 2012.
- **Transportation is a growing employment sector in Pennsylvania, but workers are in short supply.** Pennsylvania currently faces a truck driver shortage, which will become more significant as truck freight tonnage is expected to grow by 72 percent by 2040. Additionally, a third of U.S. railroad employees were eligible for retirement in 2013, and rail freight tonnage is expected to increase by 41 percent by 2040. Training will be needed to ensure new workers can meet job requirements and maintain the required licenses.
- **Combined,** these trends and issues call for an implementation plan that addresses the critical challenges that lie ahead.

FREIGHT MOVEMENT

Pennsylvania is truly the Keystone State with respect to freight movement.

\$1.6 TRILLION
of goods and services travel through PA each year.



By 2040, it is projected to grow to **\$3.7 TRILLION**

Source: CDM Smith Analysis of PA TRANSEARCH Data 2011



A STRATEGIC DIRECTION FOR TRANSPORTATION

PA On Track's vision for the future of transportation in Pennsylvania is to:

Deliver a quality transportation system to support the economy and lifestyles of current and future Pennsylvanians.

The Plan is organized around four major goal areas, which are in turn supported by various objectives and performance measures.

PA On Track's Strategic Framework

- **GOALS AND OBJECTIVES** direct transportation investments and translate the strategic vision into something that can be measured and tracked.
- **PERFORMANCE MEASURES** monitor and communicate progress toward goals, evaluate investment scenarios, comply with national performance requirements, and track the Plan's implementation over time.

SYSTEM PRESERVATION

Preserve transportation assets using sound asset management practices within the limitations of available resources

Objectives

- Optimize pavement conditions
- Reduce the number of structurally deficient bridges
- Encourage state-of-good repair initiatives for all modes
- Limit the number of load-restricted bridges

Performance Measures

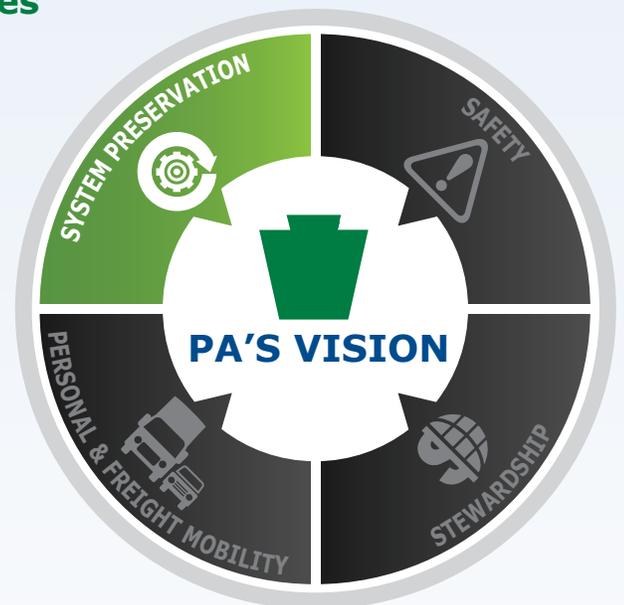
- Percent of pavements in excellent, good, fair, and poor condition (International Roughness Index (IRI))
- Pavement structure index (Overall Pavement Index (OPI))
- Percent of structurally deficient bridges (by deck area) (MAP-21 measure)
- Number of load-restricted bridges

Strategies

Asset management has gained greater prominence in recent years – the shortage of funding makes it at the same time a critical business practice and affects Pennsylvania's ability to address it adequately.

The following strategies have been identified in support of system preservation efforts:

- Develop an inventory, condition information, and a management strategy for all locally-owned transportation system assets
- Implement enterprise asset management for programming and decision-making
- Prioritize state-of-good repair approaches that preserve transportation system assets
- Implement a Capital Inventory and Planning Tool to store, maintain, edit, and report on transit's capital assets



SAFETY

Improve statewide safety for all modes and all users

Objectives

- Reduce statewide transportation system fatalities
- Reduce serious injury crashes statewide
- Invest in cost-beneficial approaches and technologies that enhance the safety of the transportation system
- Improve public understanding of high-risk traveling behaviors
- Reduce crashes, injuries, and fatalities in work zone areas
- Promote, develop, and sustain multijurisdictional traffic incident management programs to achieve enhanced responder safety and safe and quick traffic incident clearance

Performance Measures

- Number of fatalities and serious injuries (MAP-21 measure)
- Rates of crashes with fatalities and serious injuries per vehicle miles traveled (MAP-21 measure)
- Number of fatalities and serious injuries in work zones
- Number of rail-crossing fatalities, serious injuries, and incidents

Strategies

PA On Track advances several strategies to address Pennsylvania's safety concerns:

- Implement the Strategic Highway Safety Plan
- Emphasize the Highway Safety Manual in all design processes
- Address safety issues during earlier phases of project planning
- Partner to expand driver improvement programs for seniors and younger drivers
- Emphasize safety for pedestrians and bicyclists through design modifications, education, and aggressive coordination with enforcement
- Ensure highway design accommodates transit and freight
- Support efforts by the General Assembly to enact tougher laws that address distracted driving
- Address the transport of hazardous materials in business plans, LRTPs, and county local hazard mitigation plans



PERSONAL AND FREIGHT MOBILITY

Expand and improve system mobility and integrate modal connections

Objectives

- Provide multimodal infrastructure and technology advancements to eliminate bottlenecks and improve system efficiency and trip predictability
- Increase access to jobs, labor, and transportation choices in urban, suburban, and rural communities
- Support communities through appropriate and equitable transportation modal options and investments
- Improve first and last mile intermodal access and connections
- Improve bridge under-clearances and intersection geometry

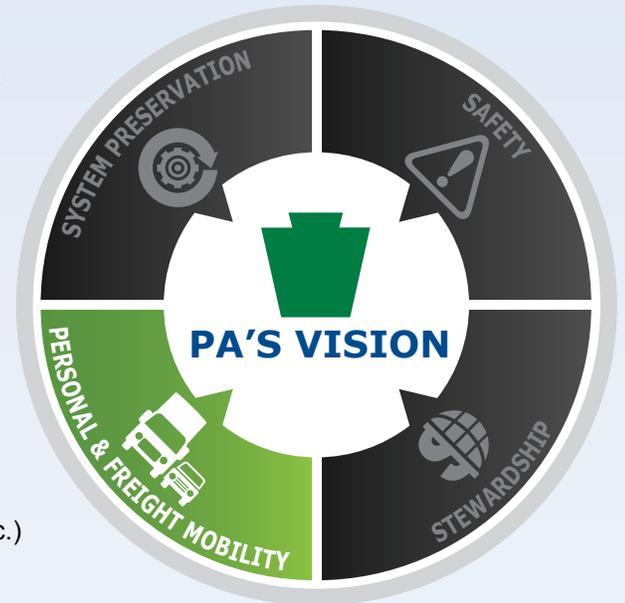
Performance Measures

- Annual hours of truck/auto delays (cost of delays)
- Annual transit ridership (e.g., fixed route, shared ride service, etc.)
- Percent/number of freight bottlenecks eliminated

Strategies

The strategies advanced by PA On Track reinforce the work that PennDOT has initiated not only on Corridor Modernization, but also on other efforts such as “Plan the Keystone” for passenger rail services, and regional consolidation studies for public transportation. The Plan also offers strategies to acquire a better understanding of bicycle and pedestrian infrastructure and the need to advocate for funding for the state’s ports, as shown in the following strategies:

- Optimize multimodal infrastructure through improved operations
- Incorporate a project prioritization tool into statewide planning and programming as a validation process
- Identify the Multimodal Economic Competitiveness Network in collaboration with Pennsylvania’s MPOs and RPOs
- Prioritize and enhance intermodal connections (“first and last mile”)
- Implement station improvements and interlocking projects on the Keystone Corridor
- Integrate freight mobility and parking accommodation needs into the Corridor Modernization program
- Work with local and state partners to support sustainable, community-based shared-ride services
- Develop a systematic approach for calculating bicycle and pedestrian needs statewide
- Partner with private sector freight carriers to investigate strategies for improving modal efficiency
- Advocate for additional funding for the state’s ports, locks, and dams
- Inventory substandard bridge underclearances for rail



STEWARDSHIP

Increase efficiency and sustainability through modernization of assets and streamlining of processes

Objectives

- Ensure a high standard of quality and maximize effectiveness of agency and user investments
- Enhance the performance of the transportation system while protecting Pennsylvania's natural, cultural, and historic resources
- Encourage the development and use of innovative technologies
- Support transportation investments that reflect the diversity of Pennsylvanians and their needs
- Support coordination of land use and transportation planning
- Support economic development
- Support technical assistance/training courses offered to municipalities
- Support clean air initiatives
- Promote initiatives aimed at improving system operations and energy efficiency



Performance Measures

- Annual savings through PennDOT modernization
- Timely delivery of approved local projects
- Timely delivery of highway occupancy permits (issued for occupancy of highway right-of-way, opening the surface of the highway, placing a facility or structure, or opening an access points to the highway)
- Number of municipal officials trained through the Local Technical Assistance Program (LTAP) on the coordination of land use and transportation planning

Strategies

Strategies related to stewardship reflect not only a desire to minimize transportation's footprint on the environment, but also how effectively Pennsylvania's financial resources are used in constructing, operating, and maintaining the state's transportation infrastructure. PA On Track's strategies related to stewardship are:

- Assess weather-related vulnerability in statewide and regional planning
- Continue and accelerate implementation of the "Linking Planning and NEPA Process" to advance project delivery
- Continue sponsoring course offerings on critical land use topics that protect the state's investments in the transportation system
- Raise awareness of freight's value to the economy and its impacts on Pennsylvania's transportation infrastructure
- Encourage the regional consolidation of transit agencies where efficiencies can be demonstrated
- Use public-private partnerships to expand the available pool of capital and tap into private innovation and approaches
- Investigate opportunities to incorporate technology and Intelligent Transportation Systems (ITS) across Pennsylvania
- Coordinate with local/county governments on traffic signal management operation and maintenance agreements
- Support the use of alternative fuels and related equipment and facilities
- Continue to plan for the advent of autonomous/connected vehicles

INVESTMENT NEEDS

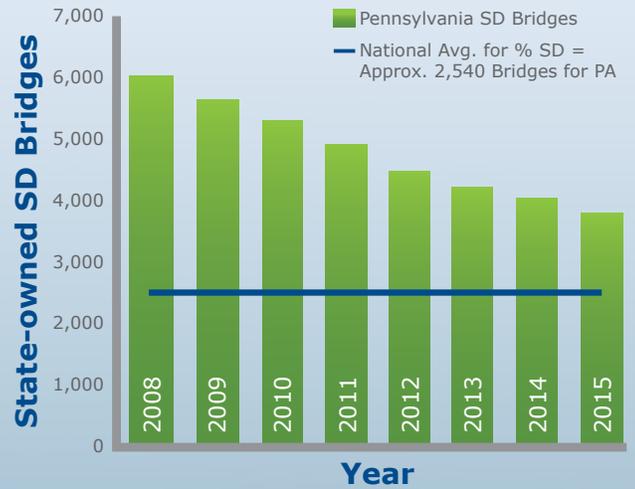


Highways and Bridges – Approximately half of Pennsylvania’s annual transportation budget is dedicated to the state’s 40,000 miles of roadway and more than 25,000 bridges.

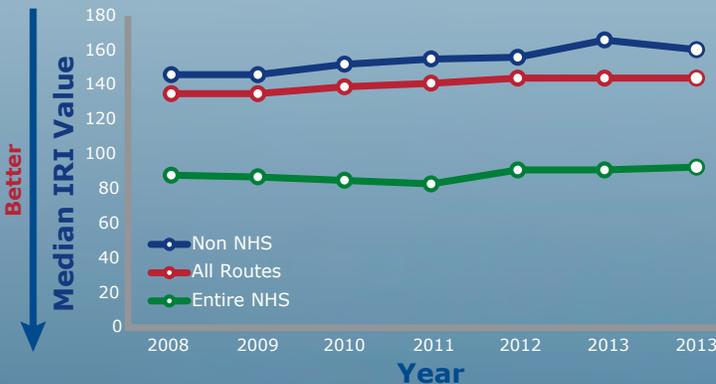
Pennsylvania has shown improvement in reducing its total number of structurally deficient (SD) bridges, from a recent high of 6,034 in 2008, to 4,019 at the end of 2014. In context, for the state to reach the national average of SD bridges (10 percent), this number would have to be driven down to 2,540.

Nearly 35 percent of Pennsylvania’s non-state-owned bridges are SD, and nearly 14 percent are posted or closed.

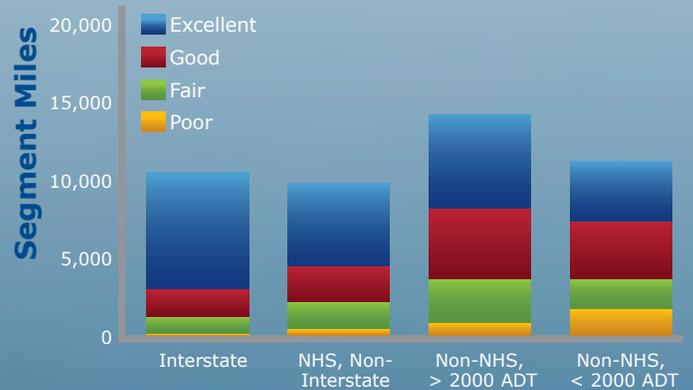
The accompanying charts show changes in International Roughness Index (IRI) values across the state’s various highway networks. PennDOT’s 5-year goal is to reduce miles of roadway with a poor IRI to 1.5 percent of interstate highways, and 5 percent of non-interstate NHS highways, and to maintain current IRI conditions on the remainder of the system.



Source: PennDOT Bridge Management System, December 2015



Source: PennDOT Highway Administration, 2014



Business Plan Network

Source: PennDOT Highway Administration, 2014





Appurtenances – Appurtenances are supporting infrastructure and includes assets such as traffic signals (14,000+ statewide); culverts (5,531); active roadway/highway tunnels (12); and a wide range of signs, guiderail, and ITS devices.



Public Transportation – Capital needs of the state's transit agencies are high and cannot keep pace with future needs. An emphasis going forward will be on maintaining a state of good repair and system preservation. There will also be a focus on updating facilities and service with new technologies, as well as consolidating transit systems where appropriate.



Passenger Rail – Capital needs include various station improvements, interlocking projects, and the removal of at-grade crossings. Additionally, Pennsylvania provides \$15.5 million in annual operating support for the *Pennsylvanian* and the *Keystone* services.



Rail Freight – These are largely privately-owned facilities, although Pennsylvania does provide grants from the Capital Budget and Rail Freight Assistance Program. These grants assist shippers and carriers with the rehabilitation of track infrastructure or bridges to accommodate heavier car loadings and grade-crossing improvements.





Ports and Waterways – Until recently, the Delaware River channel had been maintained at a depth of 40 feet. A program to deepen the navigation channel from its entrance at Delaware Bay up to the Benjamin Franklin Bridge is currently underway. Approximately 60 percent of the channel has been deepened to 45 feet, and the remainder of the deepening is scheduled to be completed by 2017. The Port of Pittsburgh District is served by 17 locks and dams that were built over 50 years ago, 10 of which are in poor or very poor condition.



Aviation – System preservation needs at Pennsylvania's Commercial Service and General Aviation airports include pavement rehabilitation, building refurbishment, and utility and equipment replacement. Philadelphia International Airport is in need of capacity expansion.

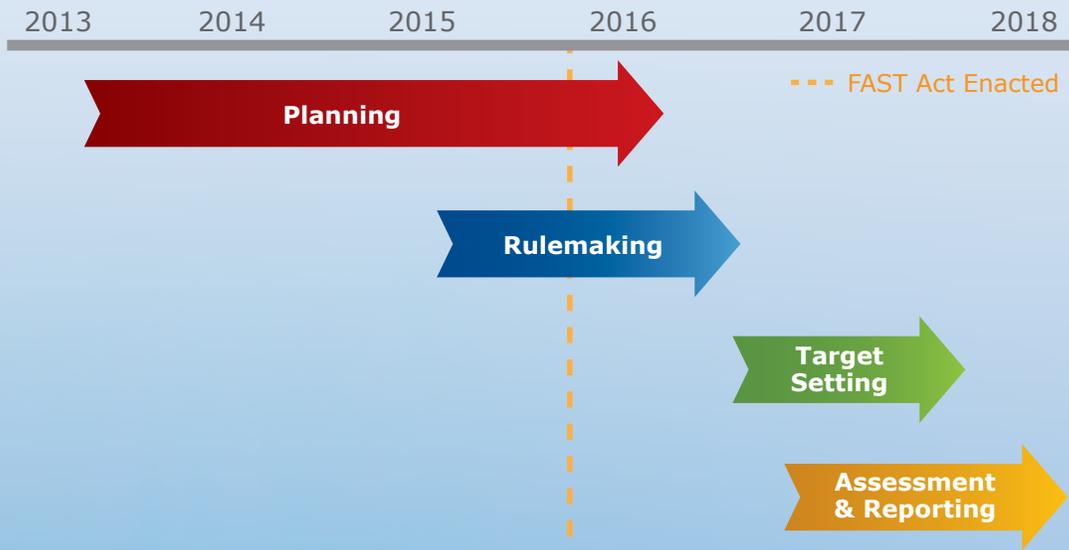


Bicycle and Pedestrian – These modes are critical components of our transportation system, yet there is a lack of information available regarding their extent and condition. A methodology is needed to identify the magnitude of bicycle and pedestrian needs statewide; PA On Track seeks to advance such a strategy.



MAJOR FACETS OF PLAN IMPLEMENTATION

The accompanying graphic shows, at a high level, how implementation of the Plan will proceed over the coming years.



Project Prioritization and the Multimodal Economic Competitiveness Network – PA On Track created these new planning tools, which will ultimately be used to evaluate candidate projects based on both their technical merit and economic benefits. This will allow for a cross-modal analysis and provide valuable input into planning and programming activities. A key implementation task will include the refinement of these tools in collaboration with the state’s MPOs and RPOs, as well as other stakeholders.

Performance Measurement and Target-Setting – As federal guidance on MAP-21 implementation continues to become available, PennDOT will work closely with its partners in establishing performance measure targets.

FAST Act – The Fixing America’s Surface Transportation (FAST) Act was enacted in December 2015. It is five-year legislation to improve the Nation’s surface transportation infrastructure, including our roads, bridges, transit systems, and rail transportation network. The bill reforms

and strengthens transportation programs, refocuses on national priorities, provides long-term certainty and more flexibility for states and local governments, streamlines project approval processes, and maintains a strong commitment to safety. The act will continue MAP-21’s emphasis on freight movement by creating a national freight policy, in addition to identifying a National Multimodal Freight Network (NMFN).

CIMS Tool – PennDOT has developed a “Commodity Information Management System” tool to make its freight data more accessible to planners and decision-makers statewide through an interactive, GIS-based platform. This tool was rolled out during 2015 with a corresponding webinar tutorial.

Commodity Assignment – A significant new feature of Pennsylvania’s upgraded travel demand model will enable users to view how different types of commodities are moving across the state’s highway network.



STAYING INVOLVED

To learn more about how the long range transportation plan and comprehensive freight movement plan are integrating Pennsylvania's transportation system, please visit www.paontrack.com.

This website features news and updates, access to the plan documents, and interactive ways for residents and businesses to get involved in planning for the future of transportation in Pennsylvania.



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