



**Pennsylvania Asphalt
Pavement Association**
Pennsylvania Rides on US.



JULY 31, 2024

CHRIS NORRIS, P.E.
DEPUTY SECRETARY FOR HIGHWAY ADMINISTRATION

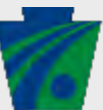
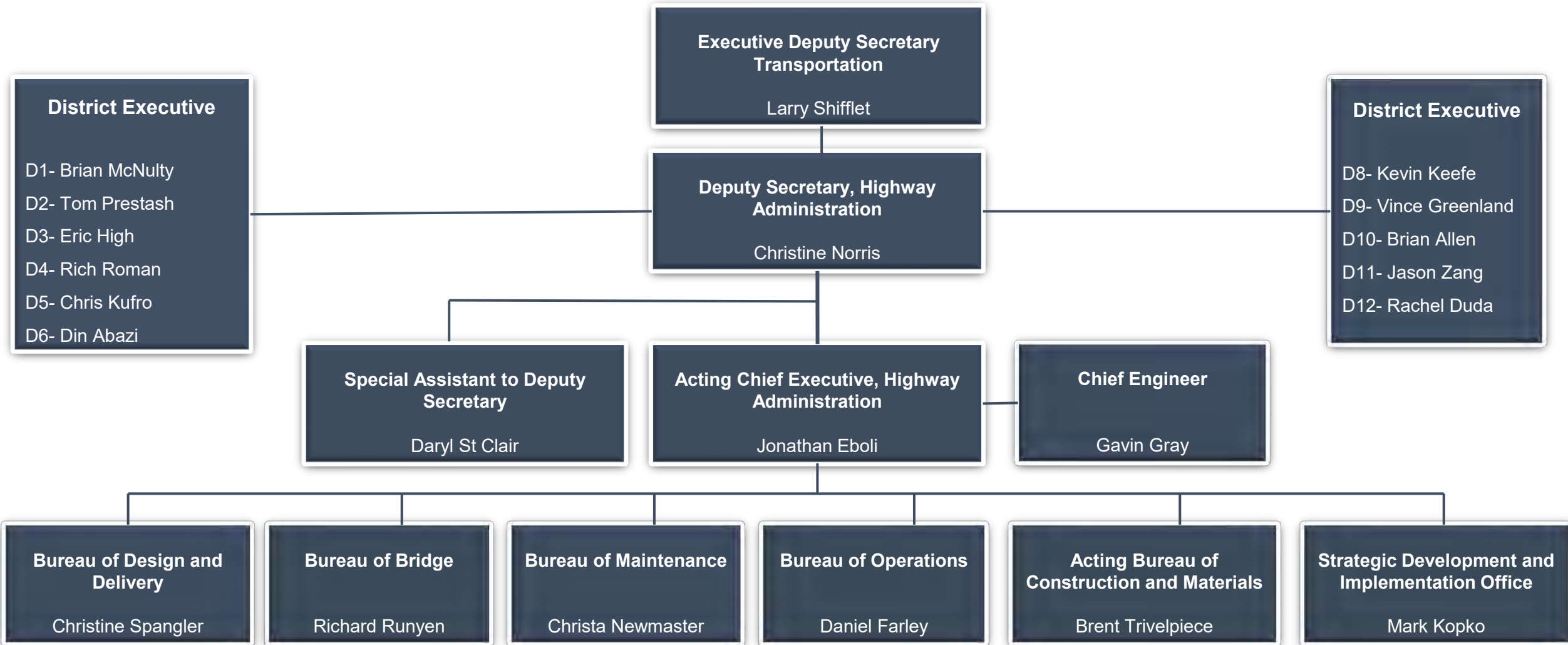
PENNDOT BY THE NUMBERS



*Total miles on all PA roadways



HIGHWAY ADMINISTRATION



FOCUS AREAS

 Safety

 Relationships

 Program Delivery

 Program Outlook



SAFETY THROUGH PARTNERSHIPS

- WORKFORCE



- WORK ZONES



- FAMILIES



- PUBLIC



SAFETY THROUGH PARTNERSHIPS



Joint Industry



Improving Safety in the Transportation and Construction Industry

- Addressing common hazards
- Improving safe work conditions for all
- Informed and educated workforce
- Using different media such as video to disseminate information

Cold & Heat
Stress

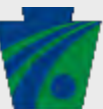
Vehicle Overhead
Clearance Hazards

Prepping for
construction seasonal
activities

Employee
Work Zone
Safety

Hazard
Identification

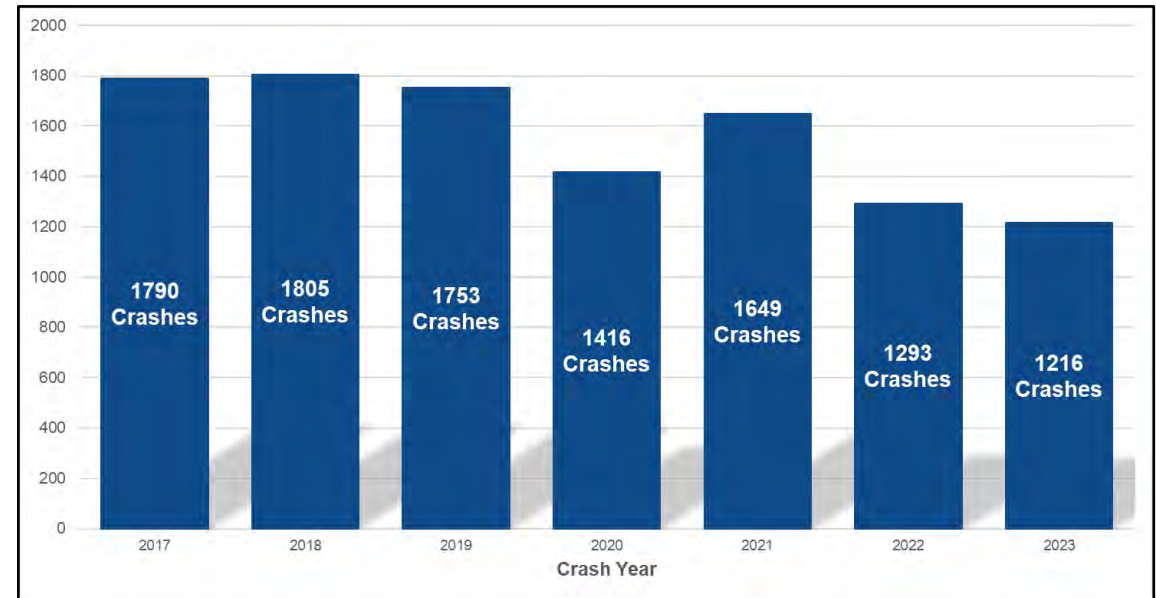
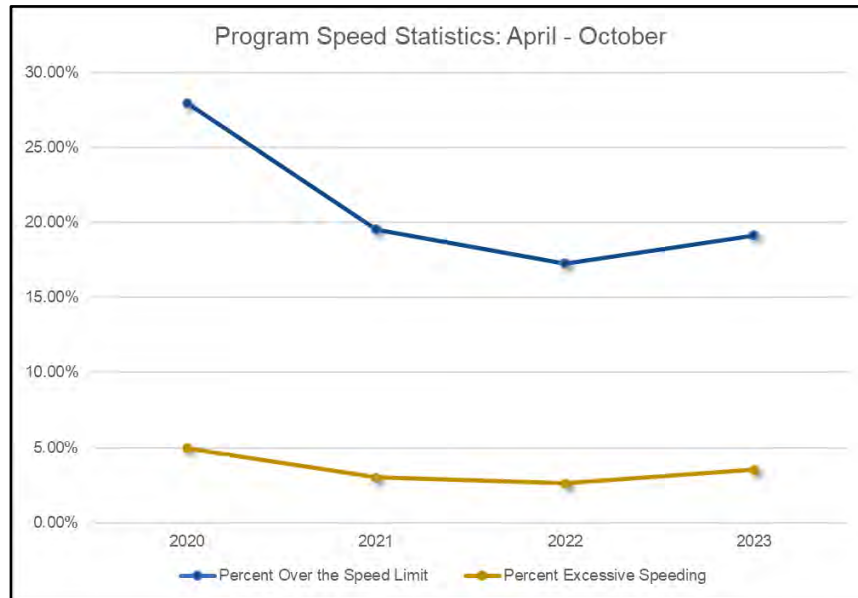
Goal: Decreased catastrophic events, especially fatalities



WORK ZONE SPEED SAFETY CAMERAS



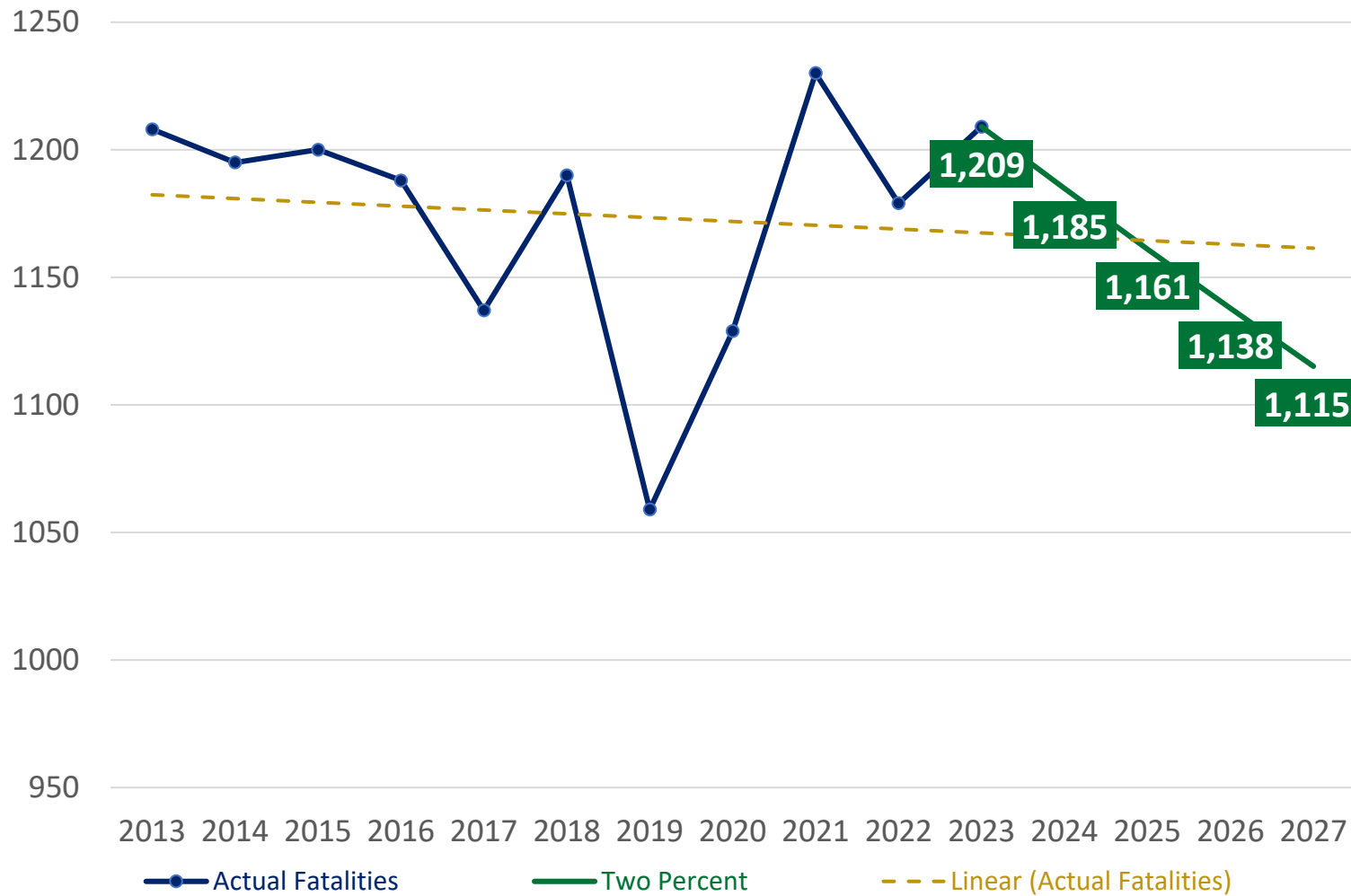
- Annual report published April 2024
- Covers from start of program to end of 2023
- Program is fulfilling its stated goals
- Program is focused on **SAFETY**, not revenue
- 68% of deployments have been to short-term patterns



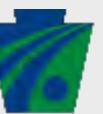
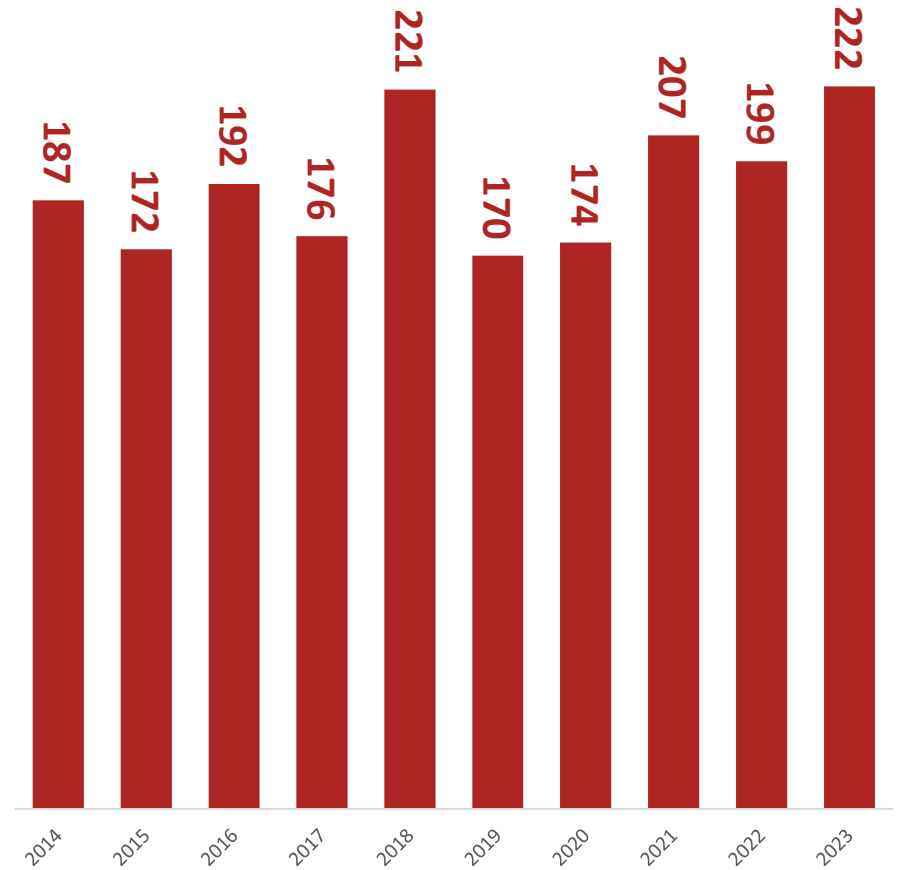
All Work Zone Crashes – 2017-2023



FATALITIES



Non-Motorized Fatalities

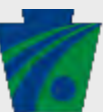


RELATIONSHIPS

INDUSTRY INTERACTION

Quality Improvement Committees

- Asphalt Paving Quality Improvement Committee (APQIC)
 - Subcommittees
 - NECEPT
 - Mixture Performance Testing
 - Innovation and Implementation
- Aggregate Quality Improvement Committee (AQIC)
- Concrete Quality Improvement Committee (CQIC)
- Concrete Paving Quality Improvement Committee (CPQIC)
- Pennsylvania Association of Asphalt Material Applicators Quality Improvement Committee (PAAMA-QIC)
- Cement Quality Improvement Committee (CEMQIC)
- Slag Quality Improvement Committee (SlagQIC)



PROGRAM DELIVERY

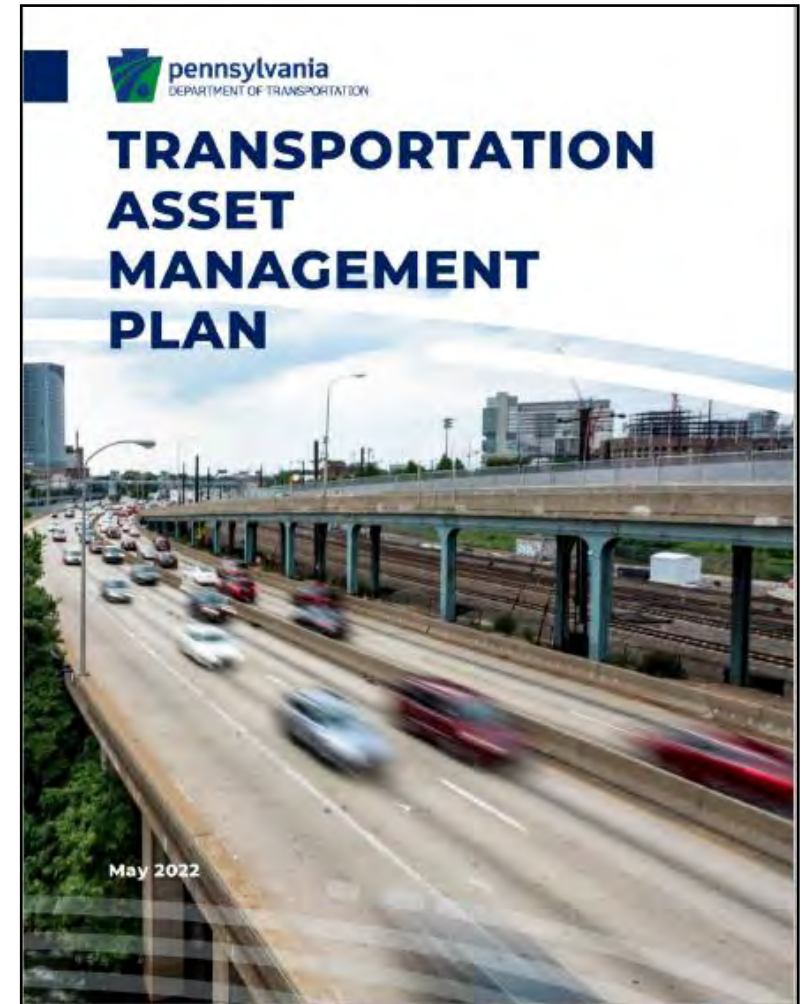
- ASSET MANAGEMENT
- PAVEMENT UPDATES
- INNOVATION
- FUNDING

ASSET MANAGEMENT

ASSET MANAGEMENT

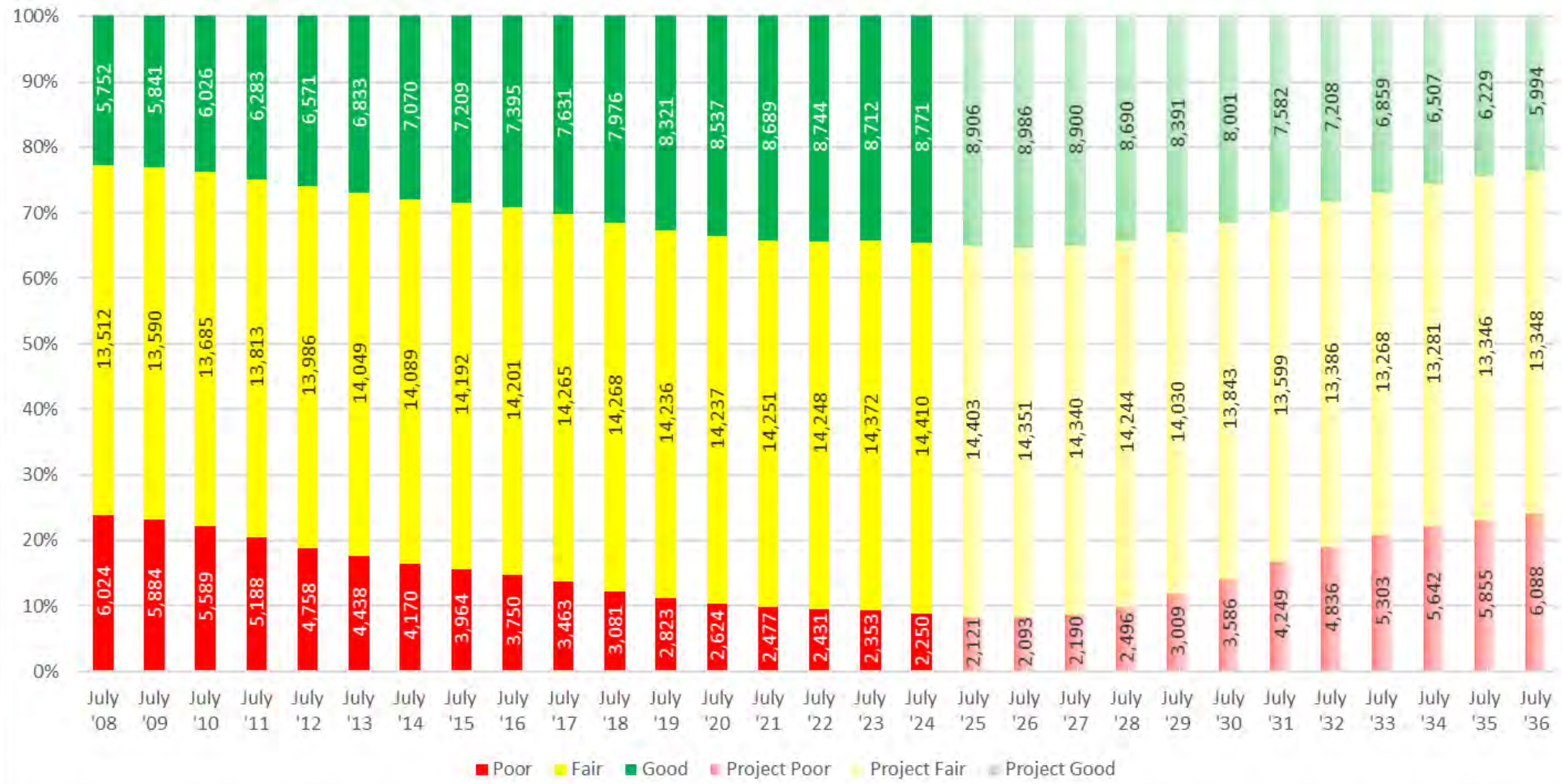
2022 Transportation Asset Management Plan

- FHWA BIL compliance issued in March 2023
- In addition to Pennsylvania's National Highway System, this TAMP was expanded to include all state-owned roads and bridges
- Includes:
 - Inventory & Conditions
 - Performance Management
 - Life Cycle Planning
 - Risk Management
 - Financial Plan
 - Implementation Plan

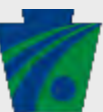
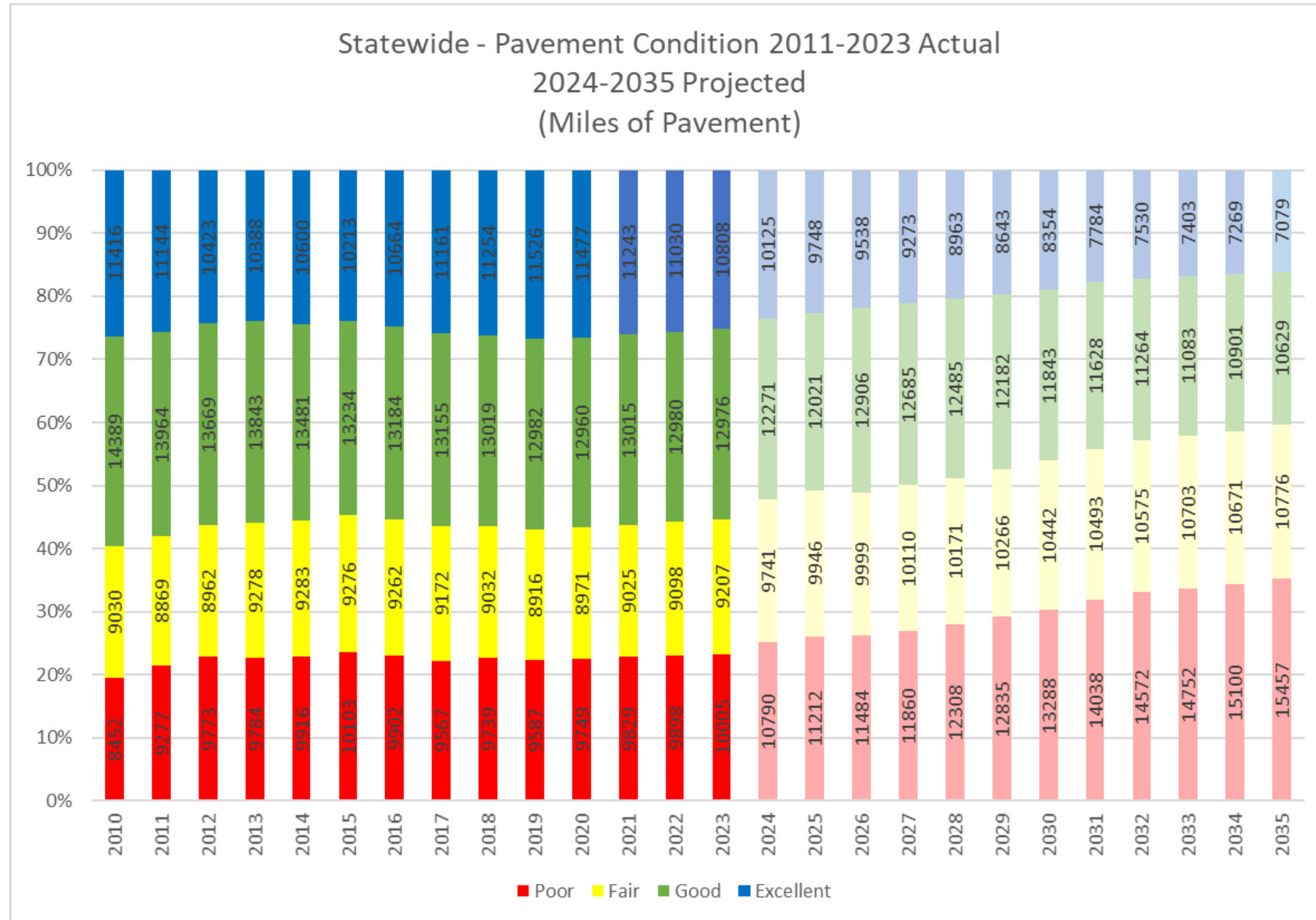


BRIDGES - STATE OF GOOD REPAIR

State Owned - Bridge Condition by Count:
2008-2024 Actual, 2025-2036 Projected



ROADWAYS - STATE OF GOOD REPAIR

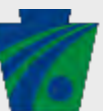


PAVEMENT UPDATES

ASPHALT PAVING QIC (APOIC)

Activities and Accomplishments

- **Balanced Mix Design Efforts:**
 - Submission of approximately 843 Asphalt Job Mix Formulas with Mechanical Testing Data
 - Based on Approved 2024 JMFs including CT-Index Data As of 6/20/2024.
 - Mixture Performance Testing – PSU Research/Data Collection (Hamburg Wheel Track Testing and CT_{Index} Testing).
 - Ongoing through September 26, 2025.
 - Issued Revised Implementation of Mechanical Testing into Pennsylvania’s Asphalt Mix Design Approval Process (SOL# 481-24-01, Feb. 23, 2024)
 - Revised implementation plan for 2024 to 2026 JMF Years.
 - Revised Bulletin 27, Chapter 2A.
- **Highly-Polymerized Asphalt Binder – FHWA Grant for SMA Pilot Projects.**
 - Four (4) ECMS projects to be let and grant funded:
 - 1 project each in D2, D5, D9, D11



ASPHALT PAVING QIC (APOIC)

Activities and Accomplishments

(Continued)

- Post-Consumer Recycled Asphalt Shingles – Development of Pilot Special Provision, Initial Pilot Projects, & Video-Log Evaluations.
 - D1, D2, & D6 Pilot Projects – All Paved in 2022.
- SMA with 10% RAP, Pub. 408, Section 419, Specification Revision Implemented
 - Pub. 408/2020, Change No. 8 (Effective 04/12/2024).
- SMA with WMA Technology as Stabilizer Pub. 408, Section 419, Specification Revision Implemented.
 - Pub. 408/2020, Change No. 8 (Effective 04/12/2024)



HIGHLY MODIFIED ASPHALT (HiMA)

- PennDOT received \$700K Accelerated Innovation Deployment (**AID**) Grant for four SMA HiMA pilot projects
 - District 2: SR 80-B42
 - District 5: SR 78-22M
 - District 9: SR 219-047
 - District 11: SR 376-A79

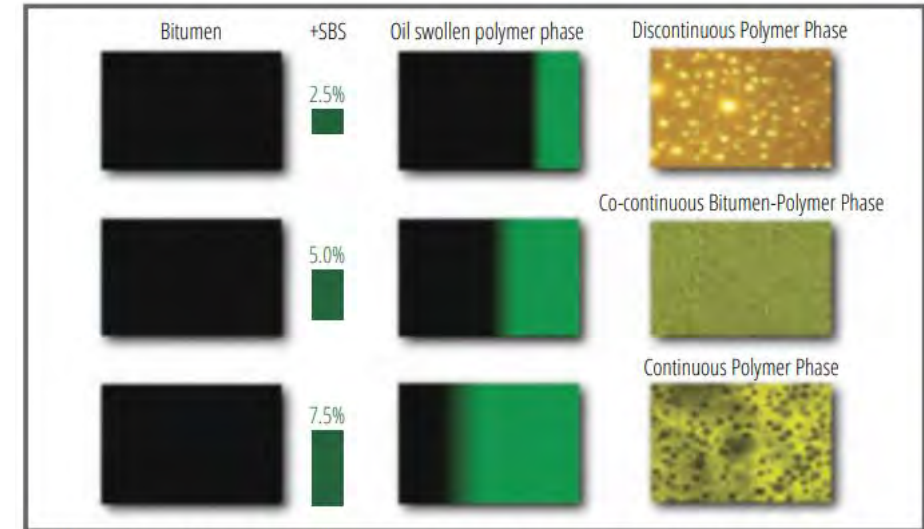
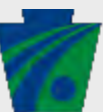


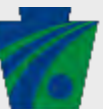
Figure 1. Effect of increasing styrene-butadiene-styrene polymer content on binder/polymer morphology (Source: Kraton Polymers)

- Polymer content 7% - 8%. About twice the amount of traditional polymer modified asphalts, e.g. PG 76E-28HP.
- Used for high ESAL roadways to alleviate rutting and increase life, up to 10X rutting and fatigue resistance. Another tool in the box...



RECYCLED PLASTICS IN ASPHALT

- Research project initiated with PSU- July 2022.
Anticipated completion Sept. 2025
 - Work on going...
 - Three pilot projects:
 - Completed projects in Dist. 6 & Dist. 11
 - One project in Dist. 8 to be completed in 2024
 - Includes field & lab testing from pilot projects
 - Stay tuned...



COMPLETED ASPHALT UPDATES

- **Fiberless SMA Option and up to 10% RAP – Included in Pub. 408, Ch. #8 – Sec. 419**
 - Permits fiberless option utilizing Warm Mix Technology (WMA) to control drain down in lieu of cellulose fibers.
 - Permits up to 10% RAP when indicated by item number in contract.
- **6.3 MM Thin Asphalt Overlay (Non-Polymer Modified Asphalt) – Std. SP (SSP)**
 - Uses standard PG 64S-22 to provide preservation treatment for lower ADT roadways, lowering cost by not requiring polymer modified asphalt.
- **Fog Seal for Asphalt Seal Coats – Currently SSP will be included in Pub. 408, Ch. #9 – Sec. 472**
 - Updated to permit Fast Break Materials such as Non-Tracking Tack (NTT), New Emulsion Materials and Dilution changes.



NEW INITIATIVES – STIC/TAG GROUPS

- **Cold Central Plant Recycle (CCPR) Base Course for High Volume Routes**

- Utilizes 100% processed RAP from project or stockpile
- Typically produced through a portable plant using foamed asphalt or engineered emulsion and portland cement
- Current specification exists but is limited to roadways up to 15,000 ADT
- Considerable energy and carbon savings

- **Highly Modified Fuel Resistant Asphalt for Amish Buggy Routes**

- Has approximately two times the amount of polymer and includes the additive to make it jet fuel resistant
- Polymer and fuel resistant additive make it more resistant to damage caused by buggies and horseshoes



ONGOING TOPICS

- **Hands On Local Acceptance (HOLA) –**
 - Current HOLA SSP for Superpave Mixes available for use
 - SMA HOLA included in Pub. 408
 - Consultant option being explored
- **Mixture Temperature Methodology –**
 - FHWA, PennDOT and PAPA discussed recommended best practices
 - PennDOT/PAPA Workgroup formed to find alternative. Discussions continue
 - Calibrated stick thermometers are required



EPDS FOR SUSTAINABLE PROJECT DELIVERY



FHWA Everyday Counts 7 (EDC-7) Environmental Product Declarations (EPDs) for Sustainable Project Delivery



Environmental Impacts

- Global Warming Potential
- Ozone Depletion Potential
- Smog Potential
- Acidification Potential



EPDS FOR SUSTAINABLE PROJECT DELIVERY

HOW WILL THEY BE USED?

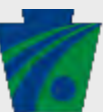
- ✓ Reduce environmental impact of infrastructure construction materials - Global Warming Potential (**GWP**)
- ✓ Improve sustainability goals and to demonstrate a commitment to the environment
- ✓ Help meet sustainability target / future goals
- ✓ Plant specific to develop industry averages and benchmarking

The image shows two side-by-side labels. The left label is a standard 'Nutrition Facts' label for a food product, and the right label is an 'EPD "Nutrition" Label' for a building product. Both labels are presented as if they are on a piece of paper with a vertical crease in the middle.

Nutrition Facts	
Serving Size 1/2 cup (115g) Servings Per Container About 4	
Amount Per Serving	
Calories 250	Calories from Fat 130
% Daily Value*	
Total Fat 14g	22%
Saturated Fat 9g	45%
Cholesterol 55mg	18%
Sodium 75mg	3%
Total Carbohydrate 26g	9%
Dietary Fiber 0g	0%
Sugars 26g	
Protein 4g	
Vitamin A 10%	Vitamin C 0%
Calcium 10%	Iron 0%
* Percent Daily Values are based on a 2,000 calorie diet.	

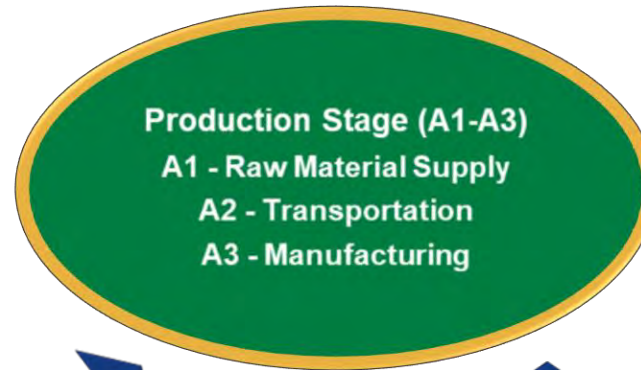
Source: <https://www.elixirenvironmental.com/environmental-product-declaration.php>

EPD "Nutrition" Label	
Your Building Product	
Amount per Unit	
LCA MEASURES	TOTAL
Primary Energy (MJ)	12.4
Global Warming Potential (kg CO ² eq)	0.96
Ozone Depletion (kg CFC-11 eq)	1.80E-08
Acidification Potential (mol H ⁺ eq)	0.93
Eutrophication Potential (kg N-eq)	6.43E-04
Photo-Oxidant Creation Potential (kg O ₃ eq)	0.121
Your Product's Ingredients: Listed Here	

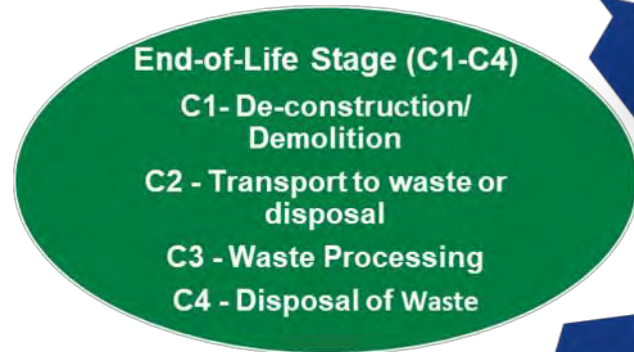


EPDS FOR SUSTAINABLE PROJECT DELIVERY

LIFE CYCLE STAGES



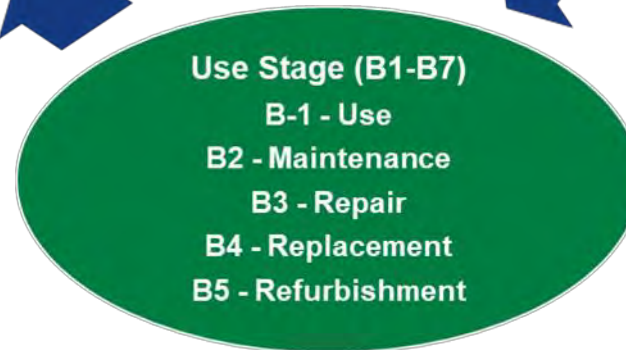
Cradle to gate (A1-A3)



Cradle to grave (A1-C4)

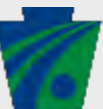


Cradle to lay (A1-A5)



*B6 – Operational Energy Use

*B7 – Operational Water Use



EPDS FOR SUSTAINABLE PROJECT DELIVERY

PLAN FOR ASPHALT EPD COLLECTION IN 2025

- Collection is planned via eCAMMS as part of the annual Job Mix Formula (JMF) approval
- Notification sent to Bulletin 41 providers and Industry on June 7, 2024
- A PDF copy of EPD will be included with each 2025 annual JMF submission using the attachment function and other data entry within eCAMMS for reporting and future benchmarking. A Strike-Off-Letter will be issued providing guidance.
- District Materials Unit will verify information of EPD attachment compared to EPD data entry when approving annual JMFs
- Notifications also provided on eCAMMS and ECMS login screens
- Standard Special Provision providing a biddable Lump Sum item to supply EPDs for all asphalt mixtures delivered to an ECMS project is currently out on Clearance Transmittal, H-24-020, for review (similar to e-Ticketing rollout). Comments are due on August 6, 2024.

OS-2C (2-22)



June 7, 2024

To: Department Bulletin 41 Producers

Re: Department Notification Regarding Environmental Product Declarations (EPDs)

Dear Bulletin 41 Producer:

The Pennsylvania Department of Transportation is in the development stage of implementing the Federal Highway Administration's (FHWA) Every Day Counts-7 (EDC-7) Initiative: *EPDs for Sustainable Project Delivery*. EPDs communicate the greenhouse gas (GHG) emissions of construction materials in a transparent and standardized manner. They provide an opportunity to reduce negative environmental impacts of building and maintaining our transportation infrastructure while also identifying possible energy and cost savings for producers while manufacturing material.

The Department is committed to the EDC-7 initiative, and this letter serves as the Department's notice that plant specific EPD collection for all asphalt mixtures will begin during the 2025 Job Mix Formula (JMF) year. Currently, the Department plans to utilize eCAMMS for submission of the EPD in PDF format using the attachment feature. Producers will attach the EPD when submitting their 2025 JMFs for approval to the district's materials unit. GHG information from the EPD will also be entered by the producer in reference data fields so it can be extracted for industry averages and benchmarking efforts in order to define low carbon asphalt mixtures. The district materials unit will verify the data entered into eCAMMS matches the data on the EPD attachment for the specific JMF prior to approval.

The National Asphalt Pavement Association (NAPA) has developed the [Emerald Eco-Label EPD Program](https://www.asphalt.org/emerald) ([asphaltedp.org](https://www.asphalt.org/emerald)) to assist producers in development of EPDs for their JMFs. Cost of this software varies between NAPA members and non-members. The Department is currently exploring various mechanisms to reimburse producers for the costs associated with developing these EPDs.

The Department will be partnering with the Pennsylvania Asphalt Pavement Association over the next several months to develop additional guidance for including EPDs with 2025 JMFs along with cost reimbursement which will be provided to all producers later this year.

Additional information related to FHWA's EDC-7 Initiative, EPDs for Sustainable Project Delivery, is available at: https://www.fhwa.dot.gov/innovation/everydaycounts/edc_7/sustainable_epds.cfm

Bureau of Construction and Materials
81 Lab Lane | Harrisburg, PA 17110 | 717.787.1037 | www.penndot.pa.gov



FEDERAL GRANT OPPORTUNITIES

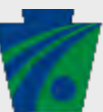


- Infrastructure Investment and Jobs Act (IIJA)
- Inflation Reduction Act (IRA)
- Low-Carbon Transportation Materials (LCTM) Grant Program
- Future Grants...



FEDERAL GRANT OPPORTUNITIES

- Low-Carbon Transportation Materials (**LCTM**) Grant Program
- Total of \$1.2 billion available for State DOTs, approximately \$22 million minimum per DOT
 - PennDOT submitted application for grant on June 7, 2024
 - Anticipated award announcements late summer 2024
 - Anticipated funding available fall of 2024
 - Obligation of funds by September 30, 2026
 - Expenditure of funds by September 30, 2031
- FHWA will also make \$800 million available to Non-State applicants (metropolitan planning organizations, local governments or agencies, etc.) in August 2024



INNOVATION

MOBILE APPLICATIONS (APPS)



eConcrete



Mileage &
Hour Log



Sample ID



eTicketing



Maintenance
& Protection
of Traffic



Visual Site
Inspection
Report



Force Account



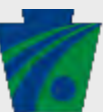
Project Site
Inspection



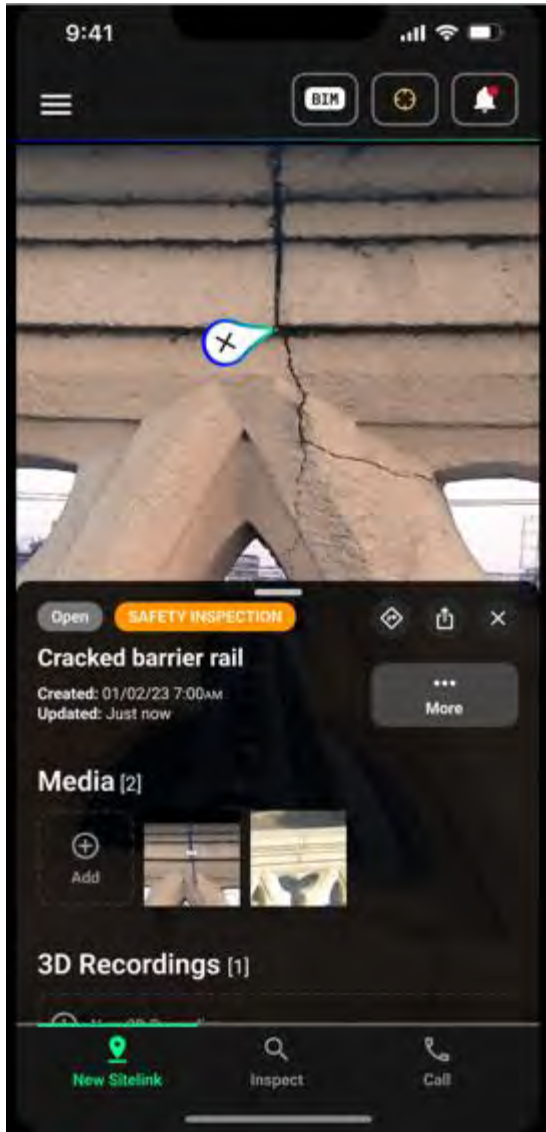
MC DOCs



Punchlist



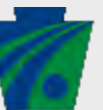
MOVING INTO A VIRTUAL WORLD



Augmented Reality & Construction Analytics



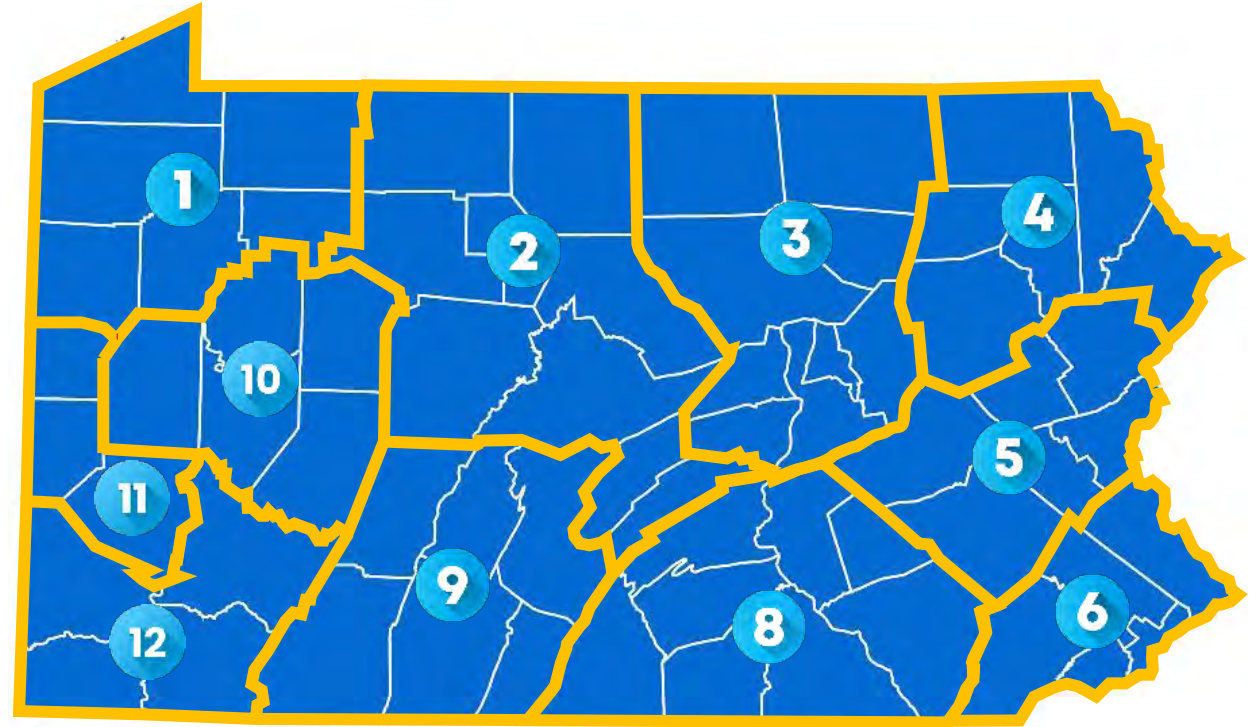
Unmanned Aircraft Systems



DIGITAL DELIVERY DIRECTIVE

Vision Statement

By 2025, construction projects will have the **ability** to be bid using 3D technology and no longer be in a traditional construction plan format.



22

Pilot projects being designed and constructed across the state using model-based approach for a standardized digital delivery process.



FUNDING

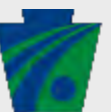
BI-PARTISAN INFRASTRUCTURE LAW (BIL)

FFY	PA Increased Formula Highway and Bridge Funding	PA Federal Formula Highway and Bridge Funding Totals (Existing + New)
2022	\$704.7 million	\$2.5 billion
2023	\$748.2 million	\$2.5 billion
2024	\$792.5 million	\$2.6 billion
2025	\$837.7 million	\$2.6 billion
2026	\$883.9 million	\$ 2.7 billion
5-year Total	\$4 billion	~\$13 billion



BI-PARTISAN INFRASTRUCTURE LAW (BIL)

Numerous competitive grant programs, each with a different focus.



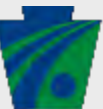
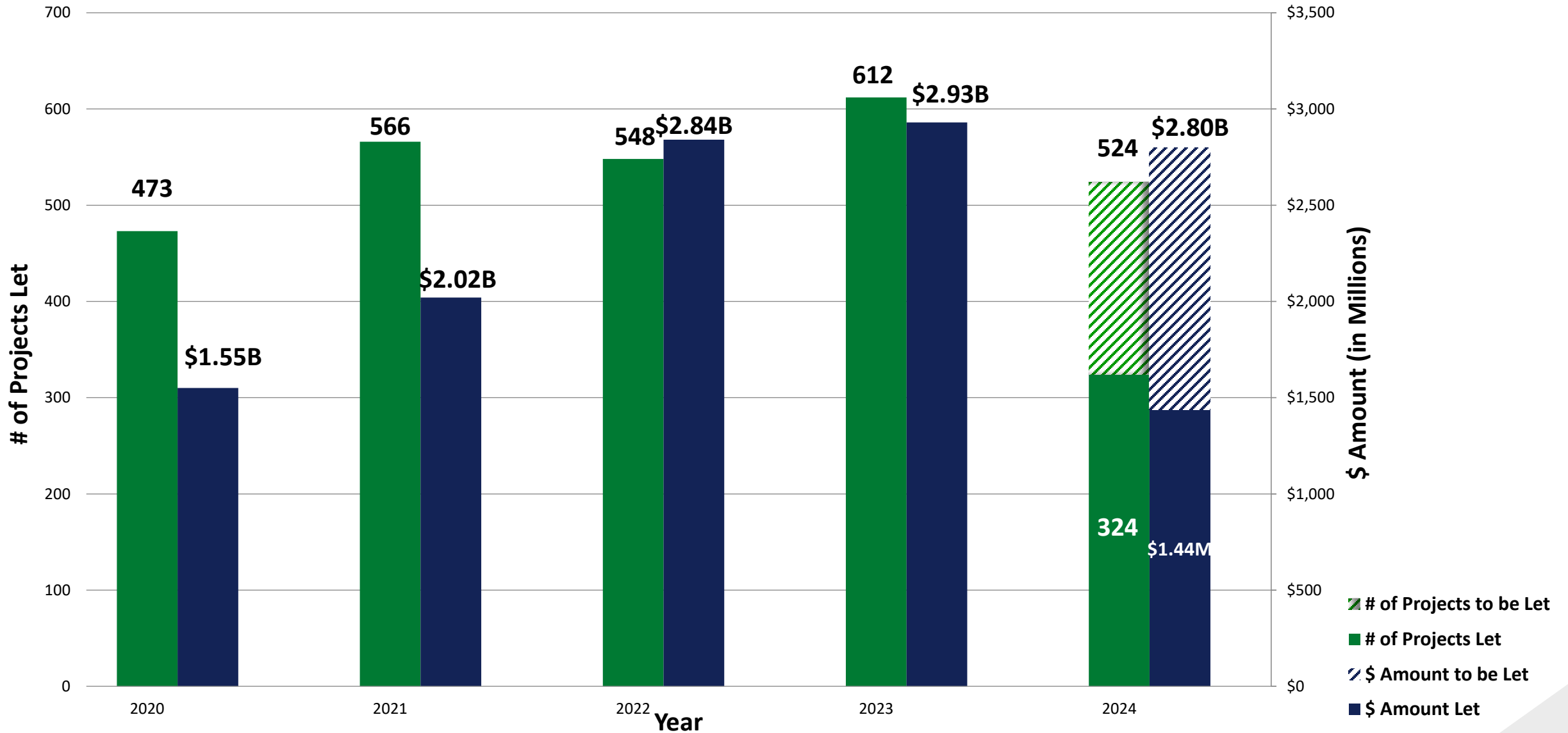
FUNDING PROJECTS– CASH FLOW

- The FY 24-25 State Budget reduced PSP funding from the Motor License Fund by \$125 Million.
 - Highway Maintenance was increased by \$75 Million
 - Highway Constuction was increased by \$50 Million
- At least \$2.8 Billion letting program is sustainable for calendar year 2024. The future lettings will continue to be evaluated especially as the federal IIJA funding is exhausted in FFY 2026.
- \$80.5 Million for Local Roads and Bridges



PROGRAM OUTLOOK

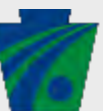
PROJECT LETTING TRENDS



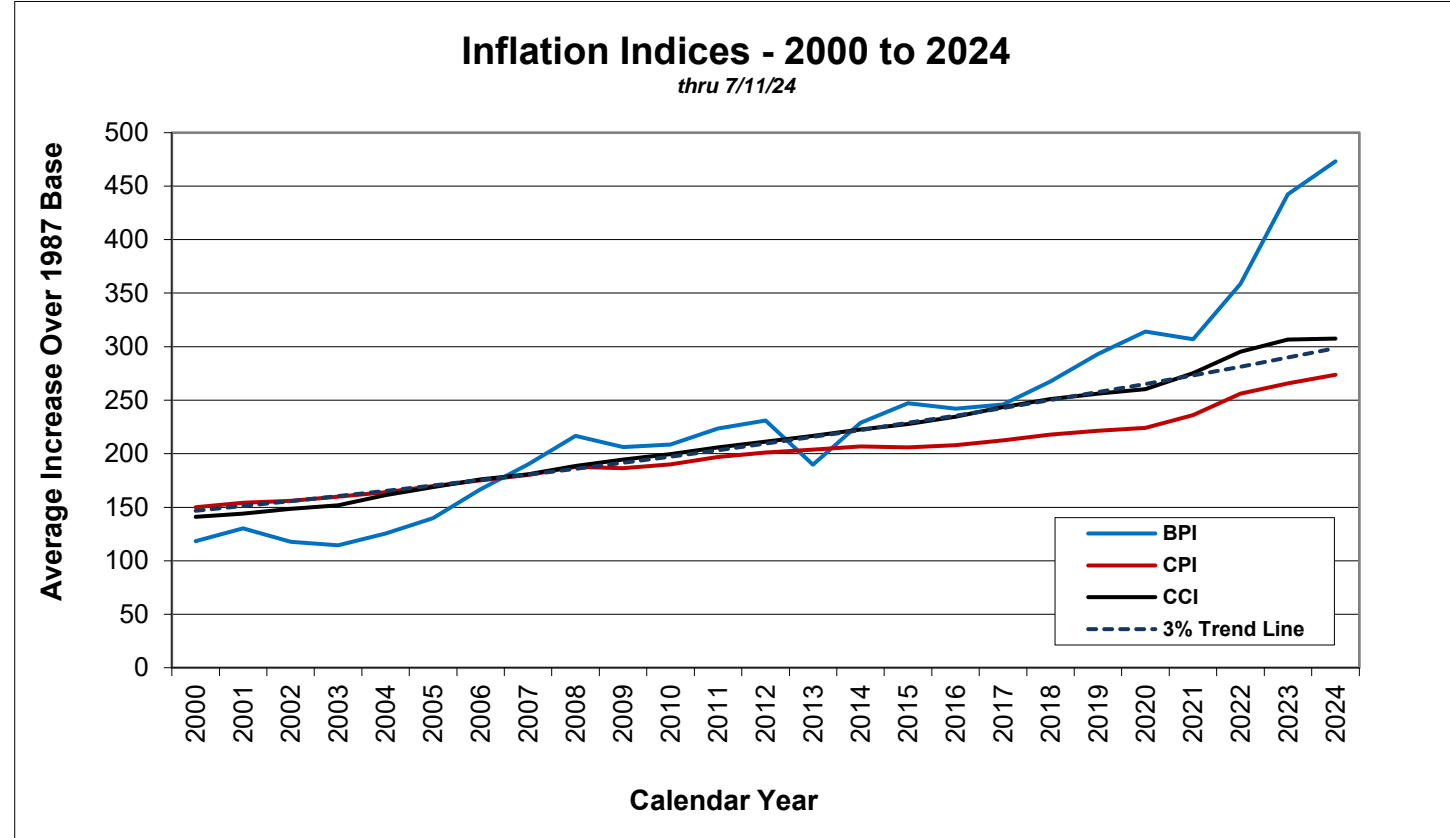
PROGRAM DISTRIBUTION

	Cost Based Percentage				
	2020	2021	2022	2023	2024*
Highway	61%	71%	73%	61%	56%
Bridge	24%	17%	19%	26%	31%
Other	15%	12%	8%	13%	13%

*2024 Projected



INFLATION



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
BPI	20.7%	7.9%	-2.0%	1.5%	8.8%	9.6%	7.1%	-2.3%	16.9%	23.3%	7.0%
CPI	1.5%	-0.4%	1.0%	2.1%	2.6%	1.7%	1.2%	5.3%	8.4%	3.8%	3.0%
CCI	2.7%	2.3%	3.0%	3.9%	3.0%	2.0%	1.6%	5.8%	7.2%	2.7%	0.2%



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[PennDOTSec](https://twitter.com/PennDOTSec)



[PennsylvaniaDOT](https://www.youtube.com/PennsylvaniaDOT)

BE SAFE ON OUR ROADWAYS!



Be Safe PA.
There's more than one way to be under the influence.
Don't Drive Impaired

Paid for with Pennsylvania taxpayer dollars.



Be Safe PA.
Buckle up every trip, every time.
Don't Drive Unbuckled

Paid for with Pennsylvania taxpayer dollars.



Be Safe PA.
Distractions are everywhere.
Don't Drive Distracted

Paid for with Pennsylvania taxpayer dollars.



Be Safe PA.
Use crosswalks and obey traffic control devices.
Drive Safe. Walk Safe.

Paid for with Pennsylvania taxpayer dollars.



MOVING FORWARD INTO 2024

**We look forward to working with PAPA and its members
in 2024 and beyond !**

