

EDC-7 ENVIRONMENTAL PRODUCT DECLARATIONS (EPDs) FOR SUSTAINABLE PROJECT DELIVERY AND LOW CARBON TRANSPORTATION MATERIALS PROGRAM



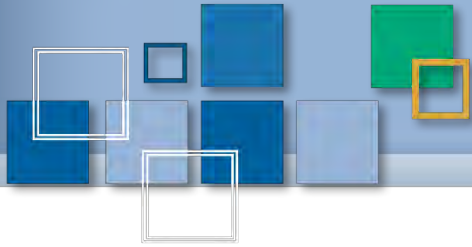
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January 21, 2025



EPDS FOR SUSTAINABLE PROJECT DELIVERY

Introduction

- ☐ EPDs for Sustainable Project Delivery
- ☐ Key Terms
- ☐ Brief Overview of EPDs
- ☐ Where It Started
- ☐ Where We Are Now
- ☐ Looking Ahead
- ☐ Exemptions for EPD Program
- ☐ Federal Grant Opportunities
- ☐ Resources



EPDS FOR SUSTAINABLE PROJECT DELIVERY

Construction materials such as concrete and asphalt have environmental impacts during their life cycle.

Environmental product declarations, or EPDs, document those impacts. This tool helps States support procurement decisions and quantify embodied carbon reductions using life cycle assessments for sustainable pavements.

(FHWA Every Day Counts (EDC) Round 7)



KEY TERMS

The Guidelines

Product Category Rule (PCR)

“Set of specific rules, requirements, and guidelines for developing Type III environmental product declarations for one or more categories.”

(ISO 14025)

Tells you how to do a

The Analysis

Life Cycle Assessment (LCA)

“A compilation and evaluation of the inputs, outputs, and potential environmental impacts of a product system throughout its life cycle.”

(ISO 14040)

Which gets detailed in an

The Communication

Environmental Product Declaration (EPD)

“Providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information.”

(ISO 14025)



KEY TERMS



Greenhouse Gas (GHG)

EPDs communicate emissions of GHG from construction materials



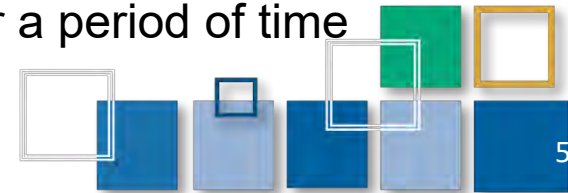
Embodied Carbon

The amount of GHG emissions associated with the manufacturer, transport and installation of construction materials



Global Warming Potential (GWP)

A measurement (included in the EPD) of the total energy that a gas absorbs over a period of time



BRIEF OVERVIEW OF EPDs

HOW WILL THEY BE USED?

- ✓ Reduce environmental impact of infrastructure construction materials
- ✓ 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

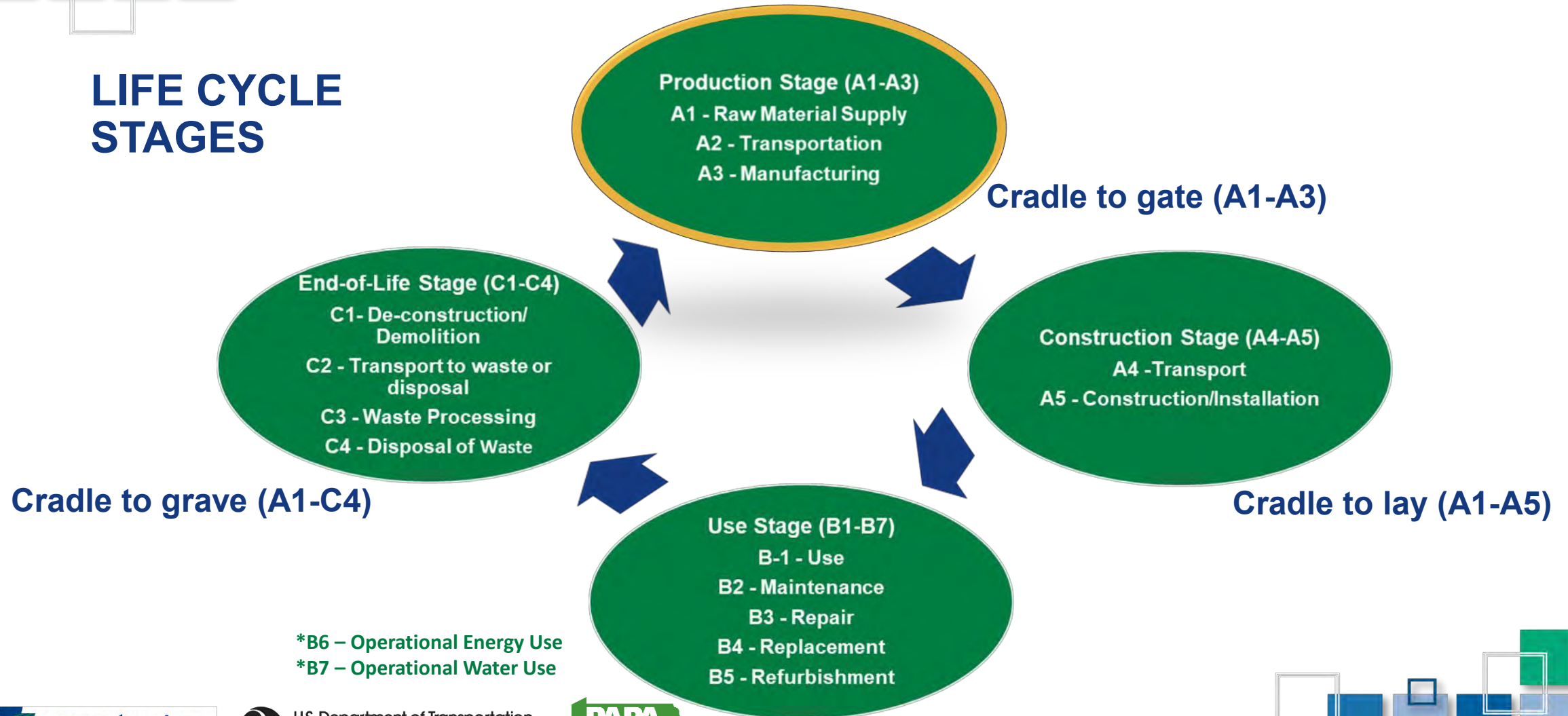
Nutrition Facts	
Serving Size 1/2 cup (115g) Servings Per Container About 4	
Amount Per Serving	
Calories 250	Calories from Fat 130
% Daily Value*	
Total Fat 14g	22%
Saturated Fat 9g	45%
Cholesterol 55mg	18%
Sodium 75mg	3%
Total Carbohydrate 26g	9%
Dietary Fiber 0g	0%
Sugars 26g	
Protein 4g	
Vitamin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

Source: <https://www.elkireenvironmental.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	

BRIEF OVERVIEW OF EPDs

LIFE CYCLE STAGES



BRIEF OVERVIEW OF EPDs

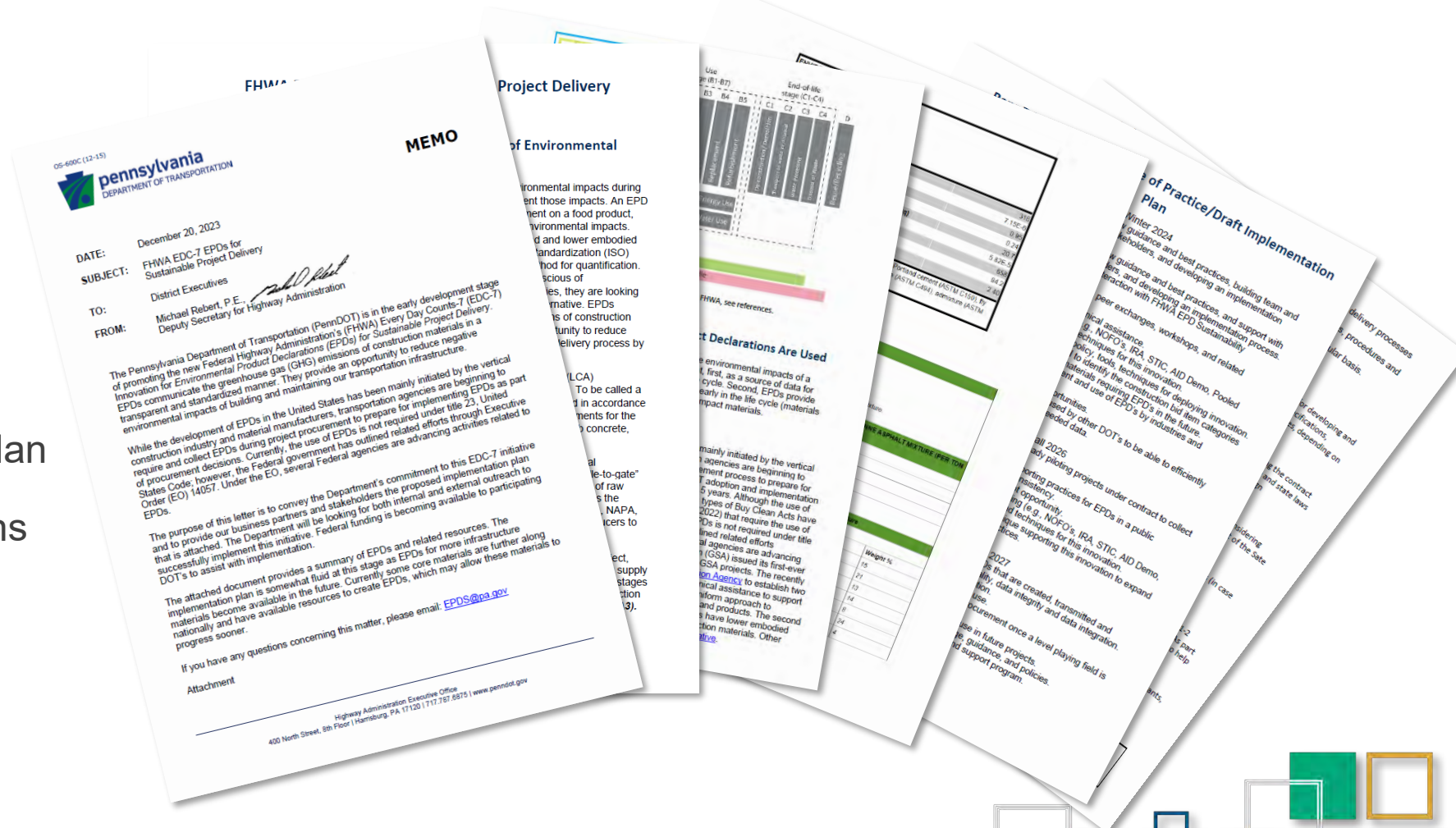
EXAMPLE EPD FOR ASPHALT MIXTURE – CRADLE TO GATE (A1-A3)

Acronym	Indicator	Unit	Quantity per Metric Tonne Asphalt Mixture (Per Short Ton Asphalt Mixture)			
			Materials (A1)	Transport (A2)	Production (A3)	Total (A1-A3)
GWP-100	Global warming potential, incl. biogenic CO2	kg CO2 Equivalent	17.43 (15.82)	5.35 (4.85)	32.28 (29.28)	55.06 (49.95)
ODP	Ozone depletion potential	kg CFC-11 Equivalent	1.32e-08 (1.20e-08)	3.23e-08 (2.93e-08)	7.96e-08 (7.23e-08)	1.25e-07 (1.14e-07)
EP	Eutrophication potential	kg N Equivalent	4.73e-03 (4.29e-03)	1.59e-03 (1.44e-03)	7.96e-08 (7.23e-08)	9.60e-03 (8.71e-03)
AP	Acidification potential	kg SO2 Equivalent	5.26e-02 (4.78e-02)	2.72e-02 (2.47e-02)	5.78e-02 (5.24e-02)	1.38e-01 (1.25e-01)
POCP	Photochemical ozone creation potential	kg O3 Equivalent	1.13 (1.02)	0.88 (0.79)	1.73 (1.57)	3.74 (3.39)

WHERE IT STARTED

Notifications to Districts and Industry (December 2023):

- ❑ FHWA EDC-7
- ❑ Summary of EPDs
- ❑ Draft Implementation Plan
- ❑ FHWA recommendations





WHERE WE ARE NOW

- ❑ In coordination with the Governor's Office, PennDOT has focused on collecting EPDs for asphalt mixtures starting in January 2025. Producers and industry notified in early June 2024.
- ❑ EPD Team was established and meets weekly since February 2024. Team includes various PennDOT employees, FHWA Division representative, and consultant assistance.
- ❑ Coordination with other states to share and understand how they are implementing their programs for EPDs.
- ❑ Presented at Pennsylvania Asphalt Pavement Association (PAPA) Environmental Seminar in April 2024 and the PennDOT/PAPA Bus Tour in July 2024.



WHERE WE ARE NOW

- ❑ Worked with the Office of Administration to develop scope and estimated costs of what enhancements will be needed to eCAMMS, ECMS, and eTicketing systems for EPD collection.
- ❑ Developed a standard special provision and pay item for offsetting cost to producers (similar to the eTicketing rollout).
- ❑ Hosted an outreach webinar in October 2024 to asphalt producers and industry in conjunction with PAPA and FHWA.
- ❑ EPD Resource Account (EPDS@pa.gov) created to field questions as outreach gets underway.

WHERE WE ARE NOW

ASPHALT MIXTURE EPD COLLECTION FOR 2025 JMF YEAR

- ❑ Collection has begun via eCAMMS as part of annual Job Mix Formula (JMF) approval.
- ❑ Notification sent to Bulletin 41 asphalt producers and Industry on June 7, 2024.
- ❑ Bulletin 27, Appendix J was updated in November 2024, outlining EPD submission process for JMF approvals (SOL 481-24-02).
- ❑ A PDF copy of EPD is required with each 2025 annual JMF submission using the attachment function and other data entry within eCAMMS for reporting and future benchmarking.
- ❑ District Materials Unit will verify information of EPD attachment compared to EPD data entry when approving annual JMFs.
- ❑ Notifications and updates provided on eCAMMS and ECMS sites.

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.emeraldco-label.org/) (asphalted.org) 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

LOOKING AHEAD



Improving Outcomes

EPDs will be a valuable tool for improving environmental outcomes of asphalt which will ultimately include the full pavement LCA (Cradle-to-grave)



In the Future

Other materials using EPDs in the future:

- ☐ Cement/Concrete
- ☐ Steel
- ☐ Aggregates
- ☐ Emulsions
- ☐ Precast
- ☐ Others...



LOOKING AHEAD

- ❑ EPDs typically good for 5 years but must be updated when constituent materials change.
- ❑ Outreach will continue with asphalt producers and other industries as EPD collection begins and evolves.
- ❑ Training will be developed and provided to Districts on EPD information, collection and utilization procedures.
- ❑ Approved EPD data will be extracted from JMFs and analyzed to prepare industry averages and benchmarks across the Commonwealth.
- ❑ Benchmarks will be used as future targets to drive reductions in total GWP for cradle-to-gate asphalt mixture production.



LOOKING AHEAD

- ❑ EPDs, are the tool that will allow PennDOT to support procurement decisions and quantify embodied carbon reductions using life cycle assessments for sustainable pavements.
- ❑ Carbon Reduction Program (CRP) funded projects require eligibility reviews by PennDOT, Center for Program Development and Management and FHWA-PA Division
- ❑ EPDs will be utilized to evaluate a projects eligibility to use CPR funds.
 - ❑ Potentially Eligible Project:

Sustainable pavements and construction materials that reduce carbon during manufacturing and/or during highway construction; *Note only the incremental cost of materials is covered and a life cycle emission analysis is required.*



EXEMPTIONS FOR EPD PROGRAM

- ☐ New asphalt plants with less than 12 months of energy consumption data.
- ☐ Plants with a new primary fuel source with less than 12 months of energy consumption data.
- ☐ Portable plants with less than 12 months of energy consumption data at the same location.
- ☐ Other unforeseen circumstances preventing EPD creation, as specified in Bulletin 27, Appendix J, if approved by the DME/DMM.



EXEMPTIONS FOR EPD PROGRAM

- ❑ Asphalt producers that **do not supply asphalt to ECMS construction projects** can be granted exemption to the EPD requirement for their JMF as required per SOL 481-24-02.
- ❑ This will allow these producers to supply asphalt to PennDOT Maintenance Forces and local municipalities.
- ❑ JMFs approved with this exemption **cannot** be used on an ECMS construction project. This exemption will allow a JMF to be Conditionally Approved.
- ❑ 2025 JMFs approved using the exemptions outlined in SOL 481-24-02 (and on the previous slide) can be approved without conditions, and these JMFs **can** be used on ECMS construction projects.

FEDERAL GRANT OPPORTUNITIES



- ☐ Bipartisan Infrastructure Law (BIL)
- ☐ Infrastructure Investment and Jobs Act (IIJA)
- ☐ Inflation Reduction Act (IRA)
- ☐ Low-Carbon Transportation Materials (LCTM) Grants Program
- ☐ Other Grants



LCTM GRANT PROGRAM

- ❑ Total of \$1.2 billion awarded to State DOTs
- ❑ Award announcements to DOTs November 14, 2024
 - ❑ Currently working on agreement with FHWA to receive/ obligate funds
 - ❑ PennDOT awarded \$31,933,577
 - ❑ Process for Substantially Lower Embodied Carbon – Identify eligible LCTM, training needs, data needs, and specification review
 - ❑ LCTM Quality Assurance & LCTM Specifications – Develop QA and/or performance monitoring plan, LCTM test strips, verification process using EPDs
 - ❑ Construction Project Information – Develop a plan to incorporate LCTM on construction projects, develop specifications, industry outreach and training
 - ❑ Use of LCTM on Projects – Identify Federal-aid projects, comparison of LCTM costs and traditional material cost. LCTM bid items
 - ❑ Substantially Lower Embodied Carbon – Collection of Energy Star Performance score, Quality incentives for environmental performance
 - ❑ Quality Assurance and Acceptance – testing equipment and/or testing requirements to accept LCTM. Quality incentives for engineer performance
 - ❑ Use of LCTM on Construction Projects – Construction & placement costs of using eligible materials. Long-term performance monitoring. Incentives
- ❑ LCTM Grants for non-State application period closed November 25, 2024 - \$800 million available nationally



RESOURCES

- ✓ [FHWA EPDs for Sustainable Project Delivery](#)
- ✓ [NAPA Emerald Eco-Label EPD Program](#)
- ✓ [FHWA's Low-Carbon Transportation Materials Grants Program Webpage](#)

Questions/Feedback

