

PENNDOT'S EDC-7 EPD PROGRAM & IMPLEMENTATION PLAN

Dean Schmitt, PennDOT Bureau of Maintenance - April 10, 2024

INTRODUCTION

- Team Members
- FHWA Everyday Count 7 Innovations (EDC-7)
- EPDs for Sustainable Project Delivery
- Key Terms
- Brief Overview of EPDs for Asphalt Mixtures
- Looking Ahead
- Overview of Federal Funding and Grants
- Plan for EPD Collection for 2025 Job Mix Formula (JMF) Year
- Other Considerations
- Resources
- Questions



TEAM MEMBERS



FHWA EVERY DAY COUNTS 7 INNOVATIONS (EDC-7)

- Nighttime Visibility for Safety
- Next-Generation Traffic Incident Management
- Integrating Greenhouse Gas Assessment and Reduction Targets in Transportation Planning
- Enhancing Performance with Internally Cured Concrete (EPIC²)
- Environmental Product Declarations (EPDs) for Sustainable Project Delivery
- Rethinking Disadvantaged Business Enterprise (DBE) in Design-Build
- Strategic Workforce Development



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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 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)

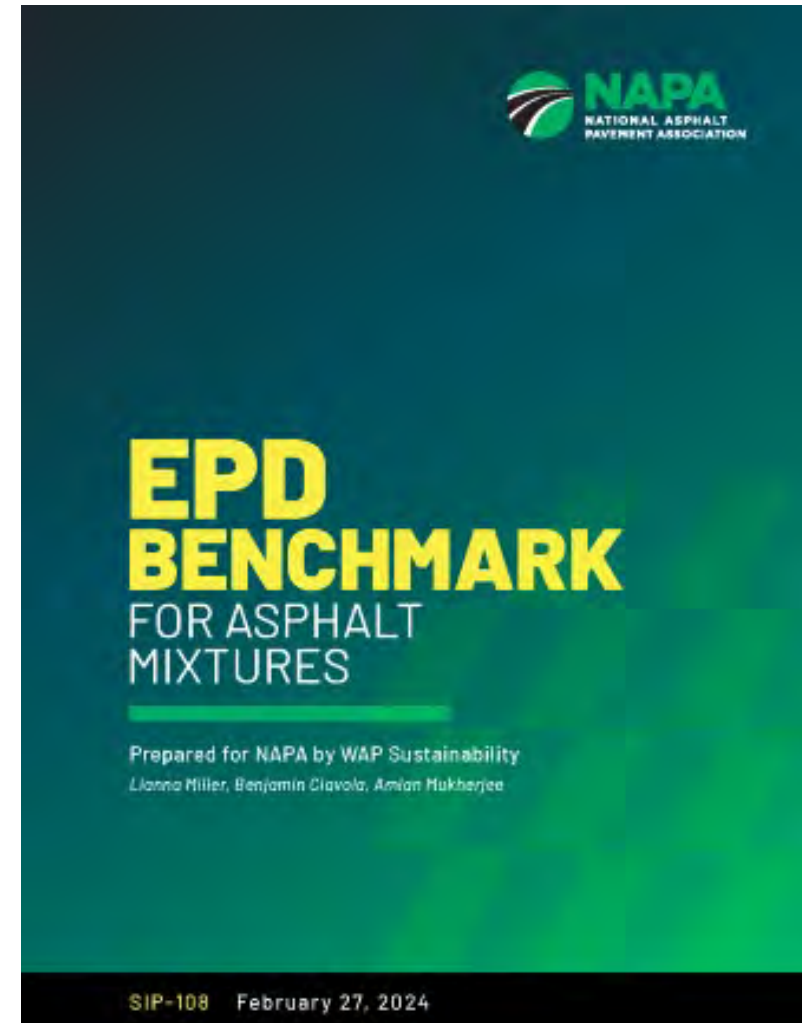
A measurement (included in the EPD) of the total energy that a gas absorbs over a period of time.



BRIEF OVERVIEW OF EPDs FOR ASPHALT MIXTURES

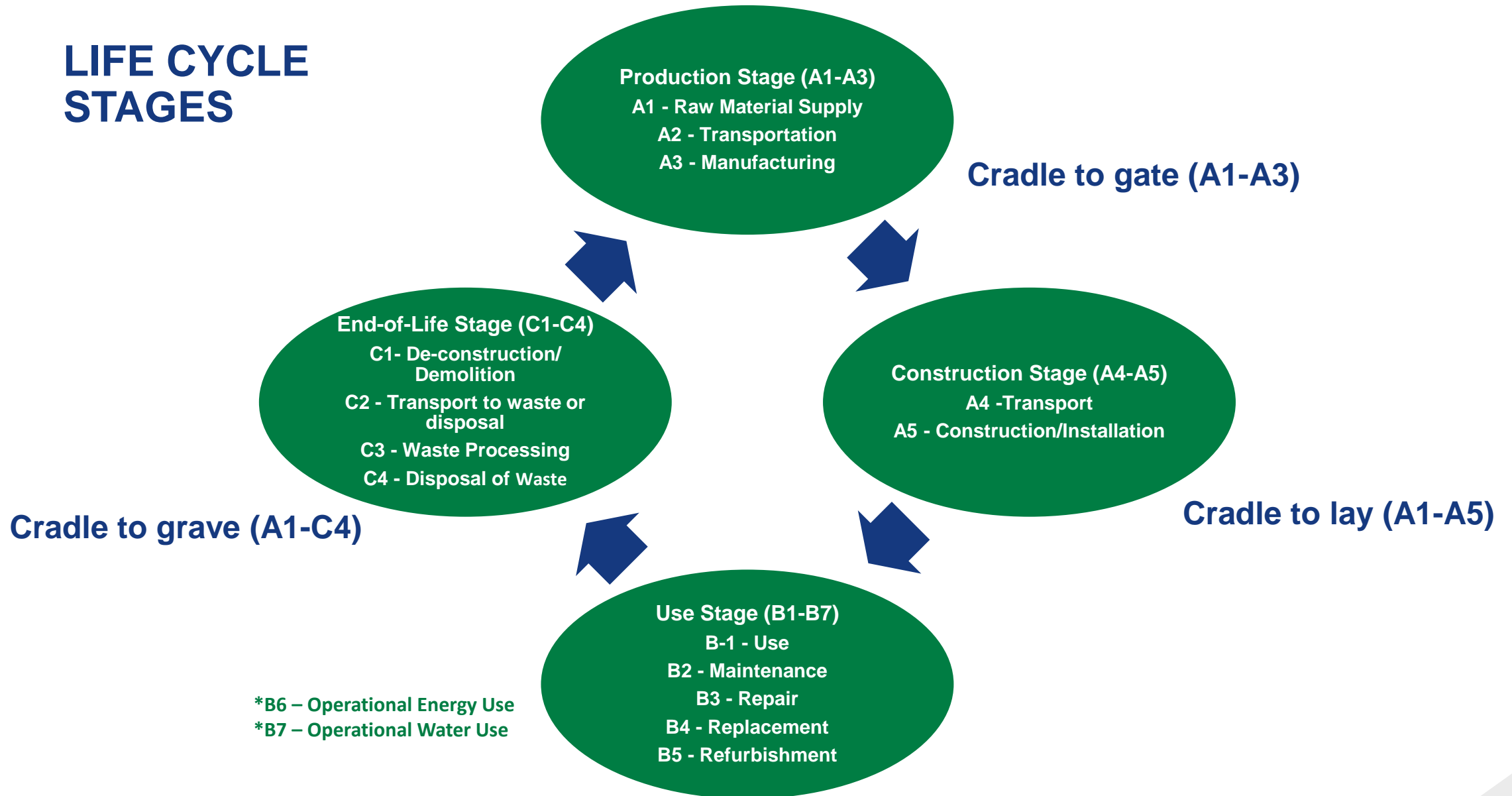
HOW WILL THEY BE USED?

- ✓ 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



BRIEF OVERVIEW OF EPDS FOR ASPHALT MIXTURES

LIFE CYCLE STAGES



BRIEF OVERVIEW OF EPDs FOR ASPHALT MIXTURES

EXAMPLE EPD FOR ASPHALT MIXTURE

TABLE 4. LIFE CYCLE IMPACT INDICATORS

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 Equiv.	40.83 (37.04)	3.14 (2.85)	17.74 (16.09)	61.70 (55.98)
ODP	Ozone depletion potential	kg CFC-11 Equiv.	9.89e-08 (8.97e-08)	1.90e-08 (1.72e-08)	7.44e-08 (6.75e-08)	1.92e-07 (1.74e-07)
EP	Eutrophication potential	kg N Equiv.	7.82e-03 (7.10e-03)	9.36e-04 (8.49e-04)	1.64e-03 (1.49e-03)	1.04e-02 (9.43e-03)
AP	Acidification potential	kg SO2 Equiv.	1.21e-01 (1.10e-01)	1.60e-02 (1.45e-02)	2.92e-02 (2.65e-02)	1.67e-01 (1.51e-01)
POCP	Photochemical ozone creation potential	kg O3 Equiv.	1.98 (1.79)	0.52 (0.47)	0.86 (0.78)	3.35 (3.04)

COURTESY OF NAPA





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:

- Concrete
- Steel
- Precast



OVERVIEW OF FEDERAL FUNDING AND GRANTS



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



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PLAN FOR EPD COLLECTION FOR 2025 JMF YEAR

- Collection is planned via eCAMMS as part of annual Job Mix Formula (JMF) approval.
- A PDF copy of EPD will be included with each 2025 annual JMF submission using the attachment function and other data collection methods 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.



Additional
information will
be available in
June 2024



OTHER CONSIDERATIONS



Department considering PDA or Lump Sum items for offsetting cost to producers (Similar to e-Ticketing rollout).



EPDs good for 5 years, but must be updated when constituent materials change (Aggregate, asphalt binder supply, etc.).



RESOURCES

- ✓ [FHWA EPDs for Sustainable Project Delivery](#)
- ✓ [NAPA Emerald Eco-Label EPD Program](#)
- ✓ [Join the FHWA Low-Carbon Transportation Materials Email List to receive updates about the Program](#)



QUESTIONS?

Submit questions to: EPDS@pa.gov

