

Environmental Product Declarations (EPDs) for Asphalt Mixtures

Frequently Asked Questions & Answers

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Introduction

The Pennsylvania Department of Transportation (PennDOT) is supporting the Federal Highway Administration's (FHWA) Every Day Counts-7 (EDC-7) Innovation for *Environmental Product Declarations (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.

Construction materials such as asphalt mixtures, cement, concrete, and steel have environmental impacts during their life cycle. To document these impacts, EPD reports are being required as part of asphalt Job Mix Formula (JMF) submissions to scientifically quantify and communicate potential environmental impacts.

Resembling a nutrition statement on a food product, EPDs are based on the International Organization for Standardization (ISO) approved methodology that uses life cycle assessment (LCA) as the method for quantification. This tool helps States support procurement decisions that aim to understand and achieve lower embodied carbon emissions.

PennDOT is collecting EPDs for asphalt mixtures beginning with the **2025 JMF year**. The following are the Implementation Plan steps and requirements:

- Collection conducted via eCAMMS as part of annual Job Mix Formula (JMF) approvals.
- A PDF copy of the EPD is required with each 2025 (and subsequent annual) JMF submission using the attachment function and other data entry within eCAMMS for reporting and future benchmarking.
- District Materials Units will verify information on the EPD attachment compared to EPD data entry when approving annual JMFs.
- Data collected in 2025 will be stored in a database and used to establish future benchmarks which will eventually be utilized in contract procurement.
- PennDOT will implement other materials utilizing EPDs in the future, including cement, concrete, steel and precast concrete.

This document provides a list of Frequently Asked Questions (FAQs) and Answers as a reference resource for those preparing EPDs as part of annual JMF submissions.

For any additional questions or requests for information, please contact the PennDOT EPD Resource Account: EPDS@pa.gov.

Additional Resources:

- [FHWA-Every Day Counts 7 \(EDC-7\), EPDs for Sustainable Project Delivery](#)
- [eCAMMS Bulletin 41 Memo](#)
- [eCAMMS JMF EPD Submission User Guide for entering EPD Information on 2025 Asphalt JMFs](#)
- [Bulletin 27, Appendix J Update – Asphalt Job Mix Formula \(JMF\) Submissions, Environmental Product Declarations \(EPDs\) SOL 481-24-02 \(NOTE: LINK TAKES USER TO ECMS BUT A VALID ECMS LOGIN IS REQUIRED TO ACCESS SOL\)](#)

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Highlighted text indicates questions received at the 10/31/2024 webinar and added to document.

EPD Background

1. What is an EPD and what is its purpose?

An EPD is defined by International Organization for Standardization (ISO)14025 as a declaration that “*quantifies environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function*”. An EPD provides information about products from “cradle-to-gate” so that designers, specifiers, buyers, code officials and the public can better understand a product's environmental impact. It is often referred to as a “Nutrition Label” for environmental impacts of a construction material.

2. An EPD is the last step in a development process; what are Product Category Rules (PCRs) and Life Cycle Assessments (LCAs) and how are they tied to an EPD?

A PCR is a set of guidelines that determine what data should be gathered and how it will be evaluated when conducting the life cycle assessment (LCA) of a product. An LCA provides a comprehensive approach for evaluating the total environmental burden of a product and examines the inputs and outputs over the lifecycle from raw material production to the end-of-life.

3. What does “cradle-to-gate” (A1 – A3) stand for?

A1, A2 and A3 stand for the raw material supply, transport and production, respectively, of construction materials in terms of the carbon footprint associated with each activity. EPDs quantify the Global Warming Potential (GWP) of each step.

4. Why is PennDOT requiring EPDs and how will they be used?

PennDOT, along with many other state DOTs, is requiring EPDs to better understand the carbon footprint associated with construction materials and activities. The data captured from the EPDs will be used to benchmark and set future carbon reduction targets.

5. Will a supplier need to develop new EPDs for all of their mixes after the Product Category Rules (PCRs) for asphalt mixtures expire in 2027?

Yes. Typically, the software license is good for five years from date of purchase even with updates. It's anticipated that a new EPD can be easily redeveloped after the PCR expiration date.

PennDOT Projects/ Requirements

6. What if a supplier does not develop an EPD for their asphalt mixtures – can they still be a supplier for PennDOT projects?

No, PennDOT requires EPD data to be included with all JMF submissions beginning with construction year 2025. All asphalt mixtures used for PennDOT projects must have an approved JMF. JMFs will not be approved if they do not contain the proper EPD data.

There are certain cases where exemptions may apply, please see the following question for information on those situations.

7. If a supplier has a new stationary plant, portable plant or change of fuel source and does not have 12 months of data to develop an EPD, is there an exemption process?

Yes, an Exemption Request field is included in eCAMMS to address the above situations. The supplier will need to provide the reason for the exemption request, the date on which the qualifying exemption event occurred and attach any supporting documentation of the event. This information will be reviewed by the PennDOT DME/DMM as part of the JMF approval process.

8. Does this apply to plants located outside of Pennsylvania? If so, is the program set up with suppliers outside of Pennsylvania as well?

Yes, the requirements do apply to plants physically located outside of Pennsylvania. If you are proposing to use material from a plant located outside of Pennsylvania, a JMF would have to be submitted and approved for that plant/mixture and that JMF submission would have to include EPD data unless it falls under one of the exemption criteria.

9. When are EPDs required?

An EPD is required any time that a project specifies a PennDOT approved asphalt mixture, as this is required for annual JMF approval. PennDOT is requiring EPDs beginning with the 2025 JMF submissions.

10. If a supplier only supplies materials for PennDOT Maintenance, DGS and/or municipalities using liquid fuels funds and does not supply ECMS contract work, do they need to get EPDs?

For these asphalt suppliers, an exemption on the EPD requirement will be made and those 2025 JMFs can be “Conditionally Approved” without an EPD attachment and the GWP data entry as required in SOL 481-24-02. This exemption will allow these producers to continue supplying asphalt to our maintenance forces and local municipalities. However, JMFs approved with this exemption cannot be used on an ECMS construction project.

11. How long will PennDOT use the Standard Special Provision (SSP) for EPDs for asphalt mixtures?

The current SSP and pay item for asphalt mixtures will be included on projects let through the 2025 calendar year.

12. What does PennDOT see as challenges in EPD development and deployment?

Training and education about EPDs are a key first step for the EPD program deployment. Beyond education, the QA/QC validation and data collection will be important for the benchmarking required to establish future reduction targets.

13. Once PennDOT chooses a threshold, will it be an accept/not-accept or will there be a bonus given to lower GWPs?

That topic is under discussion nationally. There is a "go/no-go" option but that does not seem to be one of the better options at this time. It may be more like an A+Bx bid option where Bx would be a B^e; an environmental incentive for a lower GWP product. In the future, the Department may opt for a process and program that incentivizes production processes that result in lower GWP numbers for asphalt products. We do not expect there to be an accept/not-accept approach in terms of GWP data at this time.

14. How far into the future does PennDOT expect to go before other materials (concrete, aggregate, emulsions, etc.) will be required to complete EPDs?

The Department has made an administrative decision to accelerate EPD data collection for asphalt mixtures for the upcoming paving season. Concrete is on the near horizon. The steel industry is working to begin the process of developing PCRs and LCAs for steel products. The PCR for emulsions as well as the LCA are in development. Having said that, there is no specific timeline as of now.

15. Will PA publish values and formulas to allow producers to generate EPDs in-house?

No. Currently, there is only one software program available to calculate asphalt mixture EPDs (NAPA's Emerald Eco-Label). The requirements for developing EPDs are complex and require following the ISO standards as well as the PCR for asphalt mixtures. The availability of expertise to develop the analytics to create EPDs outside of that tool seems to be very limited at this time. Link to PCR:

https://www.asphaltpavement.org/uploads/documents/EPD_Program/NAPA_PCR_Asphalt_Mixtures_v2.pdf

EPD Development

16. Who pays to get the EPD developed?

The material supplier will be responsible for the development of EPDs for their production facilities. PennDOT is working to include a Lump Sum Bid Item in contracts let through ECMS in the 2025 Calendar year to assist in offsetting costs to the producer for EPD development to the successful bidder.

17. What is the cost to get an EPD developed?

The cost to use NAPA's Emerald Eco-Label tool is \$6,000 for non-members and \$3,000 for members. That fee is per plant and allows access to the tool for five (5) years to create an unlimited number of new EPDs or to update/revise existing EPDs for that plant.

18. Regarding small producers that don't supply ECMS projects: does PennDOT have a way to reimburse smaller suppliers? Not doing so seems unfair, as typically we sell far less to PennDOT and, at this point, will receive no funding while larger suppliers that benefit from sales directly to PennDOT are reimbursed fully.

The Department recognizes that this is a concern for producers that do not supply ECMS projects, however at this time, ECMS is the only option available to the Department to provide any cost offsets or reimbursements. This concern continues to be considered as the program advances.

19. Is it correct that mixes will not be approved without using NAPA?

2025 asphalt JMF submissions will not be approved unless they include mix-specific EPD data. As noted above, the only tool currently available to generate asphalt mixture EPDs is the NAPA Emerald Eco-Label tool available through the NAPA website.

20. What is the cost of becoming a member to be eligible for the NAPA member rate for the use of the Emerald Eco-Label tool (\$3,000)?

NAPA's membership costs are described on their website and are partly based on total annual production. NAPA Membership FAQ:

<https://www.asphaltpavement.org/membership/frequently-asked-questions-about-napa-membership>

21. Is it correct that we will have to pay NAPA \$3,000 every five (5) years for the use of the Emerald Eco-Label tool?

The cost to use NAPA's Emerald Eco-Label tool is \$6,000 for non-members and \$3,000 for members. That fee is per plant and allows access to the tool for 5 years to create an unlimited number of new EPDs or to update/revise existing EPDs.

22. Is there a discount for PAPA members?

No. NAPA is a national organization and a supplier must be a member of NAPA to receive the discount for using the NAPA Emerald Eco-Label tool.

23. How do I know if my EPD numbers are acceptable?

As long as EPDs are plant and product specific, published and developed in accordance with ISO 14025, ISO 21930 and the Product Category Rules (PCR) for asphalt mixtures, they will be accepted. ISO 14205 refers to these as Type III (Third Party Reviewed) EPDs. The data captured from the EPDs will be used to benchmark and set future carbon reduction targets.

24. Do I have to get an EPD developed for every asphalt mixture that I produce?

Yes, EPDs are material and production plant specific so any mix intended to be approved by PennDOT must have an approved EPD.

25. In some cases, a plant may need to switch binder suppliers to meet demands for production. The JMF submission allows that, but the EPD cannot account for that. Does a plant need to get a new EPD if they need to change binder suppliers during production?

No, not at this time. An EPD is based on an assumed location of where the binder supplier comes from and the effect in A2 (Transport) is negligible when the binder supplier changes.

26. Changes can occur daily due to gradation; is a revised EPD required every time this happens?

No. The EPD should be established based on the mix design for a whole production season.

27. Do you need multiple EPDs for multiple binder suppliers?

Currently, asphalt plants list multiple binder suppliers on the JMF. This is something PennDOT may reevaluate in the future, but for now identify the primary binder source supplier. If there is a switch during the season, at this time the plant will not need to develop another EPD. If the primary binder supplier would differ for the following JMF year, then an updated EPD would be needed.

28. Can you use a generic Material Safety Data Sheet (MSDS) for mixes? Some suppliers have basic bituminous concrete MSDSs.

Yes. Some producers have MSDSs published and use the generic MSDS to cover all of the mixes.

29. Regarding product ingredients for binder, is the total binder in the JMF required, or rather only the virgin asphalt percentage?

The supplier would enter the virgin binder contribution.

30. Since the percentage of aggregate in the blend is a baseline, if a plant changes the percentage blend due to maintaining the JMF gradation, do they need to complete another EPD? What is the range before a plant needs to complete a new EPD?

No. Keep in mind that everything is rounded, so a small enough change may not even change the rounding. If you change the mix in a manner that is no longer within tolerance of the original design, then a new mix design will be required along with a new EPD.

31. When entering the EPD data for individual designs, is it common that a lot of the data is redundant with similar mixes (e.g., for all 9.5mm mixes from the same plant)?

Yes, and NAPA has now integrated a copy tool to allow you to copy your data and make small changes that you need to the percentages in similar mixes.

32. What mileage should be used if the sand and stone is processed on site?

Since everything is processed on site, that would be zero (0) miles.

33. Is there a particular amount of distance that determines if the recycled asphalt pavement (RAP) stockpile or other materials are "on-site" with reference to the distance from the actual plant?

Anything within the plant's boundaries would be considered on site.

34. Is it correct that mileage is based on a one-way trip?

Yes.

35. If a supplier has a central lab that they make their designs in, but have more than one location, do they still need the NAPA Emerald Eco-Label tool license for both plants?

Yes. If a supplier is producing at more than one plant, then it will be necessary to buy separate licenses - one for each plant.

36. Does it matter when the 12-month period takes place when totaling usage of material? For example, a supplier begins this process in NAPA's system starting in December. Can they use the months of November of last year to November of this year?

Any consecutive 12-month period within the last five years can be used for capturing and submitting the data to calculate EPDs. However, the time period selected must be used consistently across all EPDs developed for that plant.

37. Would it be expected that each material will be able to use the NAPA EPD Eco-Label tool, or will they have a specific tool?

No. The NAPA Emerald Eco-Label tool is specific to asphalt mixtures only. The concrete and steel industries are in the process of exploring and developing PCRs and the associated tools and analytics necessary to generate EPDs for their materials.

38. Is there a reason that the list of product ingredients is not more detailed with accuracy in percentages?

The data entry for creation of the EPD is very precise, down to two decimal points. However, the "published" EPD rounds those numbers up or down so as to maintain the confidentiality of a producer's specific mix.

EPD Submission

39. Who reviews and approves the EPD?

The material supplier is responsible for the development of the EPDs for their production facilities and materials. EPDs must be plant and product specific and published and developed in conformance with ISO 14025, ISO 21930 and the PCR for asphalt mixtures. ISO 14025 refers to these as Type III (Third Party Reviewed) EPDs. PennDOT will review the EPD data included in the JMF submission in eCAMMS to ensure that the A1-A3 and total GWP data entered in eCAMMS match what is in the attached EPD, as well as the expiration date of the EPD.

40. What exactly does NAPA verify? The input quantities, such as how much natural gas was used, or just that everything is input correctly?

NAPA verifies the Eco-Label tool. If they see a plant at an emission factor outside of a certain boundary, they will conduct a spot check to ensure calculations in the attachments are correct.

41. How do I submit an EPD?

EPD data will be submitted as part of the annual JMF review and approval process through eCAMMS. Fields are being added to eCAMMS to allow input of the A1 (Materials), A2 (Transport) and A3 (Production) information from the EPD along with the total GWP (A1-A3) number. Please see [eCAMMS JMF EPD Submission User Guide](#) for entering EPD information.

42. There's a lot of information in an EPD – what data does PennDOT need?

Currently, PennDOT will capture the GWP for A1 (Materials), A2 (Transport), A3 (Production) and total GWP (A1-A3).

43. What data will PennDOT be able to view on the provided EPD?

PennDOT will be able to view only the submitted, published EPD and the four data fields entered into eCAMMS. PennDOT staff will review the PDF of the EPD that is attached to the JMF submission to verify that the EPD data entered in the JMF submission is consistent/accurate. Only PennDOT personnel will have the ability to view all suppliers' information in eCAMMS, similar to the existing JMF approval process.

44. Will PennDOT backcheck the information entered in eCAMMS?

Yes, PennDOT will review the attached EPD and verify that the data entered as part of the JMF submission matches the data in the published EPD, as well as the expiration date of the EPD.

45. Is there a way to look at everything on your EPD before you publish?

Yes. Once all data has been entered into the NAPA Emerald Eco-Label tool and the user selects "save", the system will generate an "unpublished" EPD in PDF format. The EPD will have an "UNPUBLISHED" watermark on it and will allow for review of the results. The EPD is not designated as final until the user selects the "Publish" button.

46. Will an EPD be accepted if it is submitted prior to expiration of the EPD, but the placement of the material will be after the expiration date?

Typically, the software license is good for five years from date of purchase even with updates. It's anticipated that a new EPD can be easily redeveloped after the expiration date.

47. Does a supplier need to update the EPD each year when they submit their JMF?

No, as long as the mixture components, fuel source, and plant are unchanged from what was submitted to obtain the initial EPD and the EPD has not expired, it can simply be resubmitted with the annual JMF submission in eCAMMS.

48. Once the EPD has been submitted and approved as part of a supplier's JMF, will they need to provide that information at any other time?

Yes, the EPD will need to be submitted to the project via ECMS Source of Supply for applicable item numbers where it is used.

49. If a project uses the same material on multiple items of work under the same contract, will an EPD need to be submitted for each item in ECMS?

Yes, EPDs will need attached for each asphalt Item Number in ECMS Source of Supply, so same JMFs for different Item Numbers will require attaching the EPD for each asphalt mixture JMF and Item Number.