



# Environmental Product Declarations and Buy Clean Policies

## Northeast Asphalt User Producer Group

November, 2022

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# The Road Forward

A Vision for Net Zero Carbon Emissions  
for the Asphalt Pavement Industry

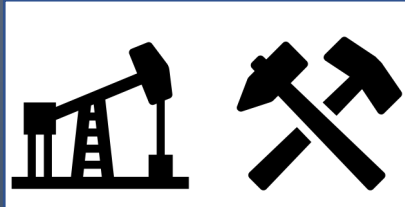
Learn more at  
[asphaltpavement.org/climate](https://asphaltpavement.org/climate)



**Vision:** Sustainable communities and commerce, connected by net zero carbon emission asphalt pavements

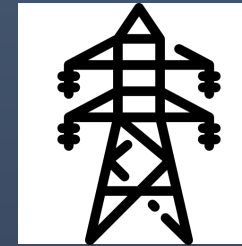
**Mission:** Engage, educate, and empower the U.S. asphalt community to produce and construct net zero carbon emission asphalt pavements

Production and  
Construction



Supply Chain

Electricity

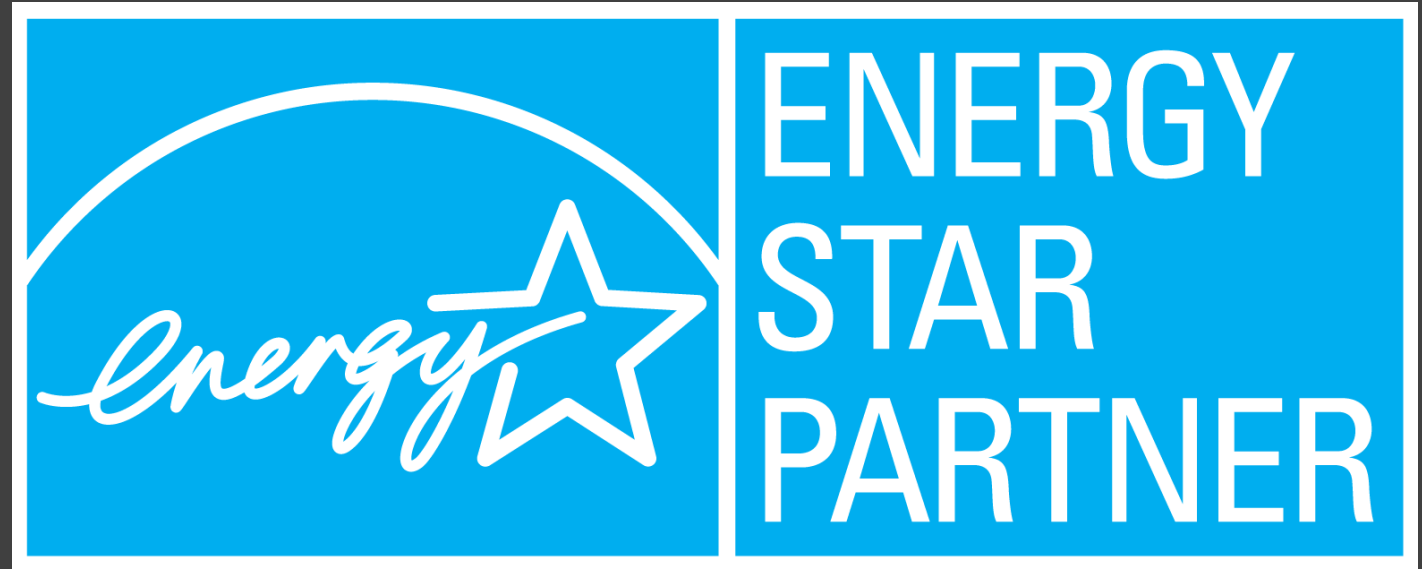


Quality, Durability,  
Longevity, Efficiency

**Net Zero  
Strategy**



# Asphalt Plant Energy Performance Peer Exchange (APEX)



- Partner with U.S. EPA
- Market and promote your company's partnership
- Learn best practices to manage energy
- Get assistance from an experienced industrial energy advisor

<https://www.asphaltpavement.org/expertise/sustainability/tools/energy-star-apex-program>

# **Introduction to EPDs**

# Understanding Carbon



## Embodied Carbon

Manufacture, transport and installation of construction materials

## Operational Carbon

Building Energy Consumption

# What is an EPD?

- **Environmental Product Declaration**
  - **Quantified** environmental information on the **life cycle** of a product to enable **comparisons** between products fulfilling the **same function**\*
- **“Nutrition label” for environmental impacts**
  - ISO Type III Environmental Label
- **Independently verified**



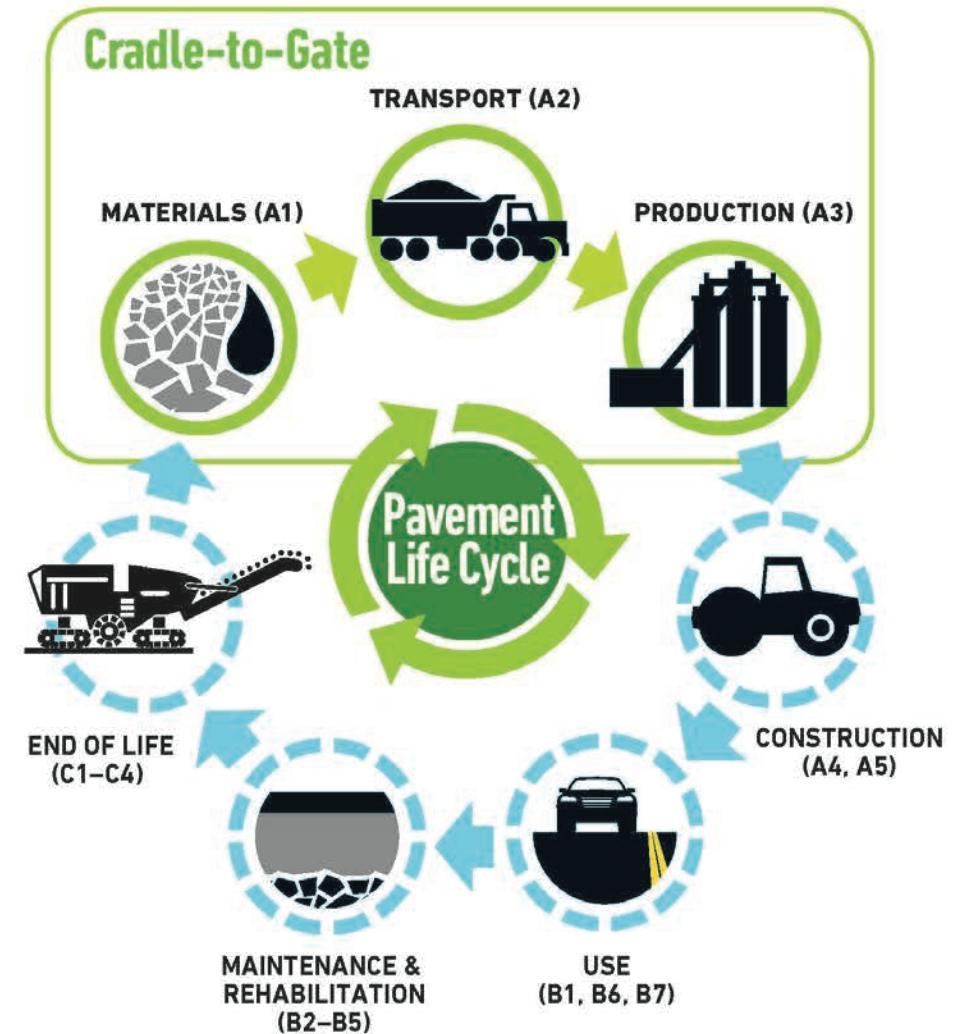
EPD “Nutrition” Label	
Your Building Product	
Amount per Unit	
LCA IMACT MEASURES	TOTAL
Primary Energy (MJ)	12.4
Global Warming Potential (kg CO <sup>2</sup> eq)	0.96
Ozone Depletion (kg CFC- 11 eq)	1.80E-08
Acidification Potential (mol H <sup>+</sup> eq)	0.93
Eutrophication Potential (kg N <sup>-</sup> eq)	6.43E-04
Photo-Oxidant Creation Potential (kg O3 eq)	0.121
Your Product’s Ingredients: Listed Here	

<https://westcoastclimateforum.com/cfpt/concrete/strategy1>

\*Source: ISO 14025:2006. EPDs from different Product Categories should NOT be compared to each other.

# EPDs for asphalt mixtures have a **Cradle-to-Gate** scope

- **Included:**
  - Materials
  - Transport
  - Production
- **Other life cycle stages are not included**
  - Mix producers have little control over them



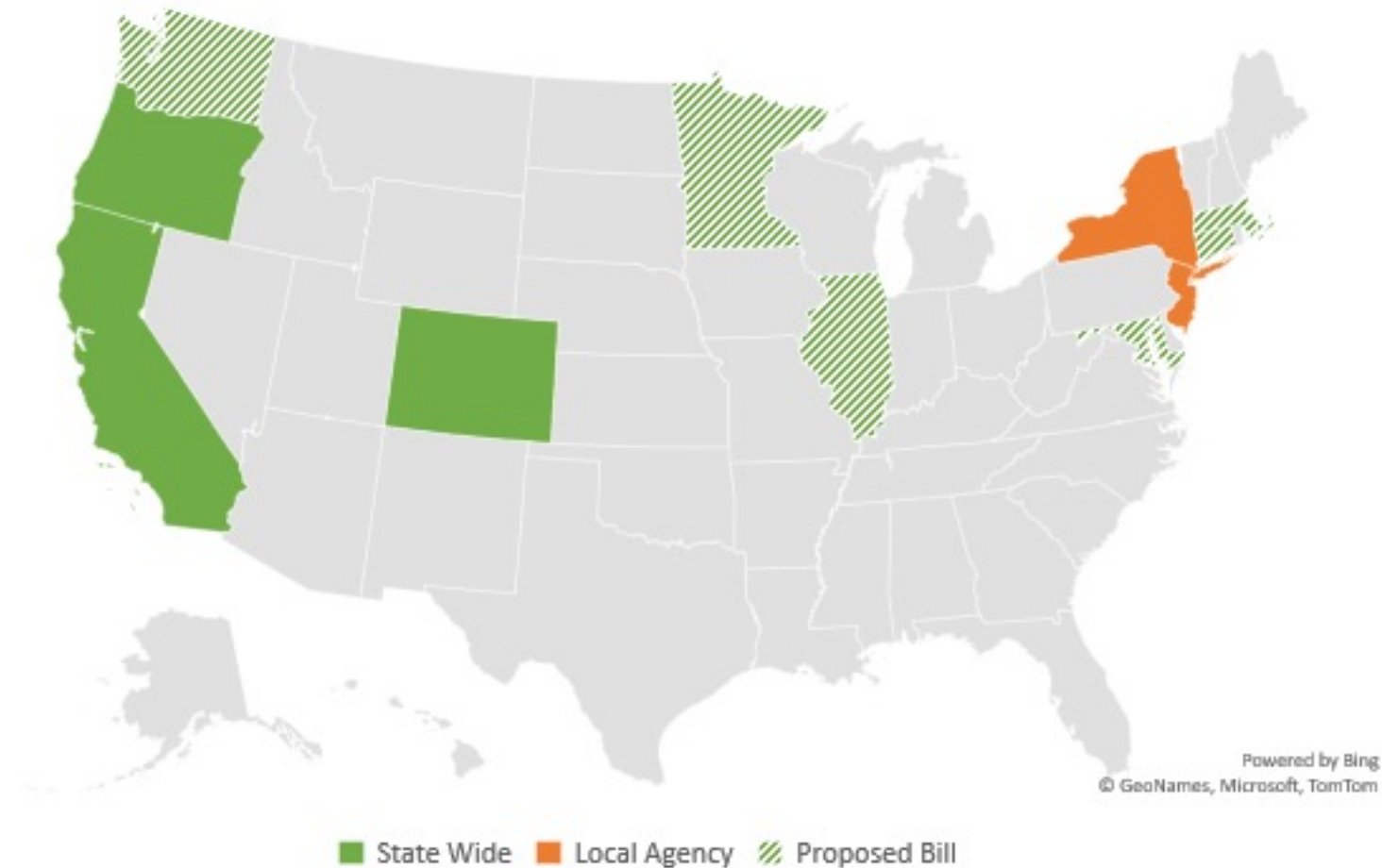


# **How and Why are Pavement Owners Using EPDs?**

# “Buy Clean” Legislation

## Jurisdictions with Buy Clean policies that include asphalt mixtures

- Caltrans
- Colorado
- Oregon
- Port Authority of New York and New Jersey
- Illinois, Minnesota, other states are considering policies





# Environmentally Preferable Asphalt and Standard

- Federal office buildings, courthouses, and land ports of entry
- Requirements
  - Submit an EPD for each mix
  - Use 2 environmentally preferable techniques
    - At least 20% RAP content
    - Warm mix technology (reduced onsite mix temperature)
    - Non-pavement recycled content (roof shingles, rubber, or plastic)
    - Improved energy/carbon efficiency of plants or equipment (e.g., natural gas)
    - Other environmentally preferable techniques (contractor can propose)

<https://www.gsa.gov/real-estate/design-construction/engineering-and-architecture/facilities-standards-p100-overview>





# The White House Council on Environmental Quality

## Buy Clean Task Force

- Coordinating across 17 Federal agencies
  - 90% of federally financed and purchased construction materials
- U.S. DOT Buy Clean Policy Statement
  - Explore the use of EPDs
  - Develop a Buy Clean Policy based on EPDs
- Partnering with State DOTs to align Buy Clean Policies



# Carbon Reduction Program



## President Biden, USDOT Announce New Guidance and \$6.4 Billion to Help States Reduce Carbon Emissions Under the Bipartisan Infrastructure Law

Thursday, April 21, 2022

*Key program will fund projects that help fight climate change and save Americans money on gas*

- Focus is on vehicle fuel consumption/emissions
- FHWA Guidance made “paving activities” eligible
  - Projects must use LCA to quantify carbon emissions reductions
- Enhanced pavement smoothness may also be eligible



# Inflation Reduction Act

## EPA

- \$250 million to standardize EPDs and help industry develop EPDs
- \$100 million to develop “low-embodied carbon construction material labeling program”

\*\*\* How will low-embodied carbon materials be defined ???

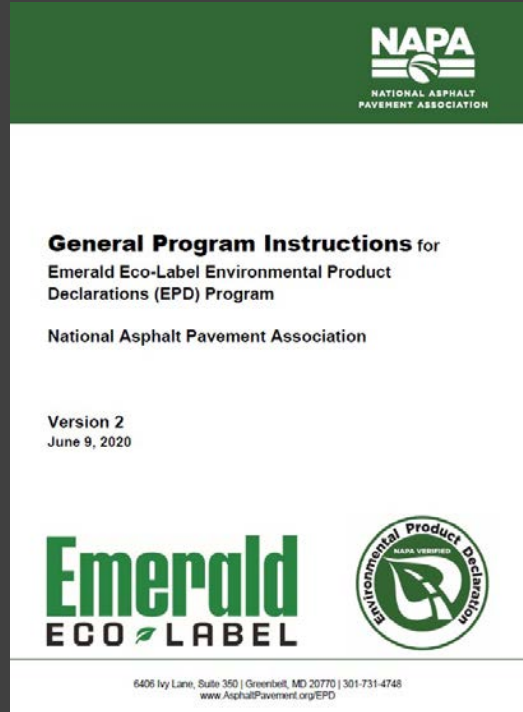
## DOT/FHWA

- \$2 billion to procure low carbon construction products
  - Federal-aid Highways, Federal Lands, etc.
  - Differential Cost or Incentive

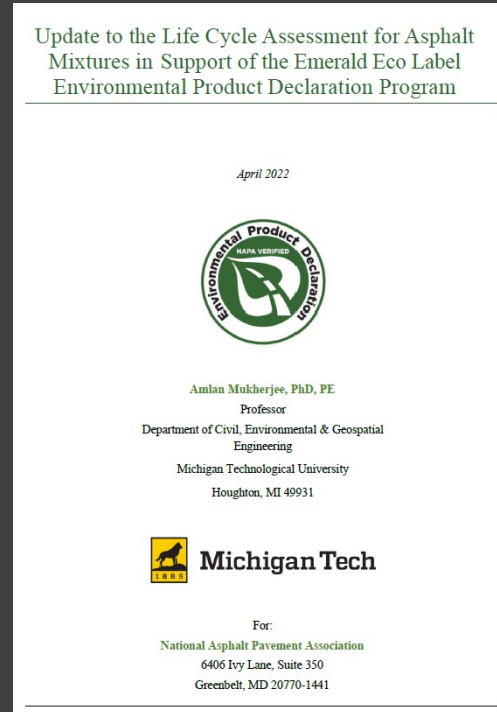
**Overview of  
Using Emerald Eco-Label  
to Develop an EPD for  
Asphalt Mixtures**

# Key Components of NAPA's EPD Program

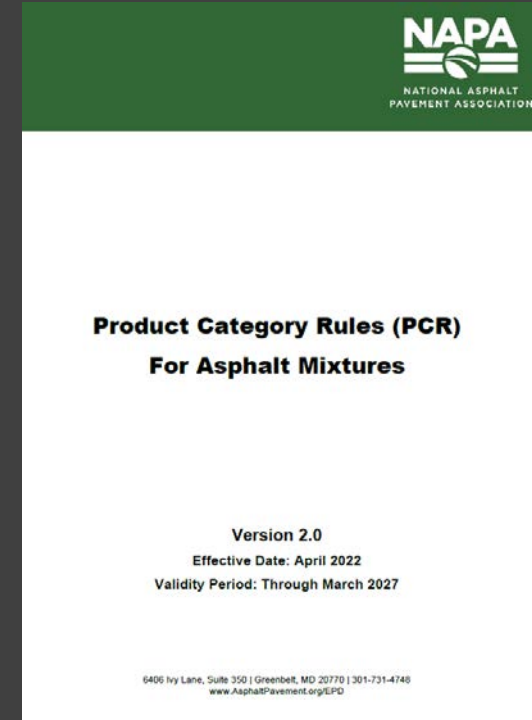
## General Program Instructions



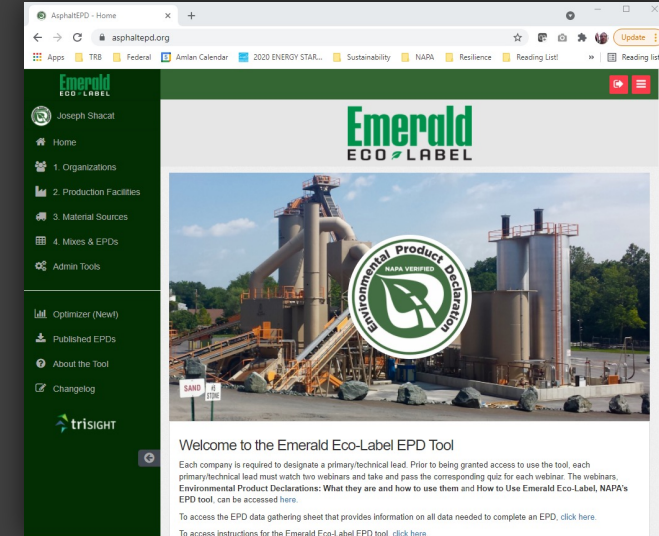
## Underlying Life Cycle Assessment



## Product Category Rules (PCR)



## EPD Software



Learn more at [www.asphaltpavement.org/epd](http://www.asphaltpavement.org/epd)



# Emerald Eco-Label Software

- NAPA's web-based **software tool**
- Asphalt mix producers use it to develop **verified EPDs**
- EPDs are **plant-specific & mix-specific**
- Can be used for **asphalt plants** located in the U.S.
- **Simplified process** that saves mix producers time and money



# Upstream datasets

- The PCR requires the use of **public datasets** for upstream energy and materials
  - Fuels and electricity
  - Aggregates
  - Asphalt binder
- **Data gaps are noted in the EPD**
  - Binder additives (polymers, ground tire rubber, etc.)
  - Mix additives (WMA, rejuvenators, fibers, etc.)
- **Cannot develop EPD if data gap >1% (individual material) or 5% (total) of mix by weight**

FEDERAL  
COMMONS





# Cover Page

## Company and Plant Information

## Product Description

## Red box indicates a data gap

## Green box has info about the EPD



## An Environmental Product Declaration (EPD) for Asphalt Mixtures

### Company Information

Test Organization is an asphalt mixture producer.

Baseline Natural Gas asphalt plant

101 W Lakeshore Dr  
Houghton, MI 49931  
USA

[[Company\_logo]]

### Product Description

This EPD reports the potential environmental impacts and additional environmental information for an asphalt mixture, which falls under the United Nations Standard Products and Services Code 30111509. Asphalt mixtures are typically incorporated as part of the structure of a roadway, parking lot, driveway, airfield, bike lane, pedestrian path, railroad track bed, or recreational surface.

Mix Name: Baseline with Terminal Blended Binder Additive Data Gap

Specification Entity: DOT

Specification: N/A

Gradation Type: dense

Mix Design Method: None

Nominal Maximum Aggregate Size: 0.75 inches

Performance Grade of Asphalt Binder: PG 64-22

Customer [Project/Contract] Number: Not Reported

This mix producer categorizes this product as a Hot Mix Asphalt (HMA) asphalt mixture. This asphalt mixture was produced within a temperature range of 149 to 154°C (300.0 to 310.0°F). Energy and environmental impacts are based on a plant's average performance over a 12-month period and are not adjusted for mix-specific production temperatures.

**Data Completeness Statement:** Upstream data for one or more of the ingredients representing less than 1% (individually) or 5% (total) of the total mass of this asphalt mixture is not available. The upstream environmental impacts associated with manufacturing these ingredients are not accounted for in this EPD. See Table 1 for more information.



This declaration is an EPD in accordance with ISO 14025:2006<sup>1</sup> and ISO 21930:2017<sup>2</sup>. The PCR is *Product Category Rules for Asphalt Mixtures*<sup>3,4</sup>. This EPD transparently describes the potential environmental impacts associated with the identified life cycle stages of the described product.

**Declaration Number:** 1.145.302 v4

**Software Version:** 2.0.0

**Date of Issue:** March 16, 2022

**Period of Validity:** March 31, 2027

This EPD is valid for asphalt mixtures produced at the location indicated on this page. Data used to inform this EPD reflect plant operations from a 12-month period beginning on March 8, 2021.

This EPD can be found at <http://dev.asphaltepd.org/epd/d/495/>

**LCA performed by:** Ben Ciavola, PhD

# **Common Questions About EPDs**



# What is the time and cost of developing EPDs?

## Pricing Schedule as of Apr. 1, 2022

Year	Member Rate	Non-member Rate	Years of Tool Access
2022	\$3,000 per plant	\$6,000 per plant	5
2023	\$3,000 per plant	\$6,000 per plant	4
2024	\$2,750 per plant	\$5,500 per plant	3
2025	\$2,500 per plant	\$5,000 per plant	2
2026	\$2,250 per plant	\$4,500 per plant	1

- Initial data collection and plant setup takes most companies a couple of weeks
- New mixes typically take 10-15 minutes

A photograph of a winding asphalt road through a forested mountain landscape. The road curves through a valley, bordered by a stone retaining wall and a metal guardrail. The surrounding area is densely forested with evergreen and deciduous trees, some of which are showing autumn colors. The road has yellow lane markings. A large white circular graphic element is overlaid on the right side of the image.

**Does the EPD give  
credit for Warm Mix?**

<https://www.fhwa.dot.gov/publications/focus/08apr/03.cfm>



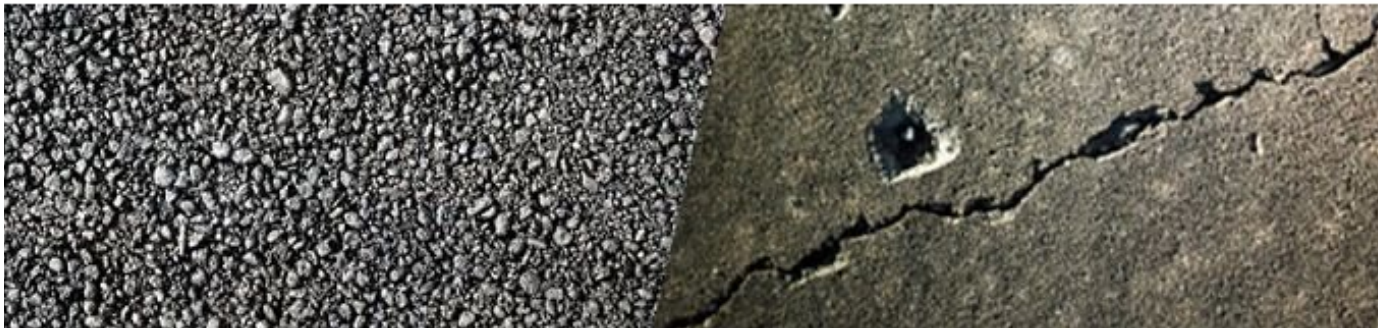


- What are the biggest contributors to GHG emissions?
  - **Burner fuel** consumption
  - **Asphalt binder** content
  - Sometimes, **aggregate hauling** exceeds everything else

# Can EPDs be Used for Pavement Type Selection?



**CONCRETE VS ASPHALT**



- **Not directly – different PCRs**
- **As data inputs to full LCA?**
  - Harmonization issues
  - Lots of uncertainty in use stage modeling
  - Scarce knowledge, experience, and capacity at agencies



**Where are we going with EPDs?**

# Policy Considerations

- **Each agency spec is a different “product”**
- **GWP Limits/Benchmarks/Thresholds**
  - Prequalification?
  - Incentive?
  - $A + B + C$ ?
- **Regional variations**
  - Climate
  - Aggregate supply
  - Availability of fuels / grid location
- **Impact of getting better data**
  - GWP may go up or down



# Key Takeaways

- EPDs provide verified data to **quantify environmental impacts**
- **Buy Clean** policies are spreading quickly
- **Inflation Reduction Act** will accelerate demand for low carbon materials
- Emission reductions can be achieved with **existing practices and technologies**
- **Prepare your company** by developing EPDs
  - Start with one plant
  - Expand to other plants, benchmark your operations

# The Road Forward Partners



*The Future  
is Riding on AJAX.®*

 **Ingevity**®



**Cargill**® Helping  
the world  
thrive



 **WIRTGEN GROUP**

 **LINDY PAVING**



**KRATON**



 **SUMMIT**  
Materials

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 **PECKHAM  
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 **HOLCIM**

**GALLAGHER  
ASPHALT**

# Thank You

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NATIONAL ASPHALT  
PAVEMENT ASSOCIATION

