FHWA Sustainable Pavements Program:
The Movement Toward More Sustainable Pavement Systems

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Disclaimer

Except for any statutes or regulations cited, the contents of this presentation do not have the force and effect of law and are not meant to bind the public in any way. This presentation is intended only to provide information to the public regarding existing requirements under the law or agency policies.
Acronyms

- EO  Executive Order
- EPD  Environmental Product Declaration
- GTR  Ground Tire Rubber
- FLCAC  Federal LCA Commons
- LCA  Life Cycle Assessment
- LCCA  Life Cycle Cost Analysis
- M&R  Maintenance and Rehabilitation
- PCR  Product Category Rules
Vision and Mission

To advance the knowledge and practice of designing, constructing, and maintaining more sustainable pavement through:

− Stakeholder engagement
− Education
− Development of guidance and tools
## Embodied Carbon

- Pavements are the part of transportation system.
  - A sector with high GHG emissions (~29%).
  - These estimates include operational emissions.
  - State DOT can have decision-making influence over embodied emissions.

### 2018 U.S. GHG Emissions by Sector

![2018 U.S. GHG Emissions by Sector](https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions)

- Transportation: 29%
- Electricity: 25%
- Industry: 23%
- Agriculture: 10%
- Commercial: 6%
- Residential: 7%

Source: https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions
“Feel Goods” vs. Metrics

• Incorporate Waste Materials
  – Plastic
  – Ground Tire Rubber
• Recycle
• Increase Durability
• Use of Local Materials

You can’t improve what you don’t measure
Elements of Pavement LCA

End goal

Ensure environmental improvements

Specifications and policy

Assessment tools, network / project / design

Organized database and validation

Data

Data definition in decision-making context

Life cycle assessment framework environment

SPP phase 1

SPP phase 2
LCA Benchmarking Tool

- Created with stakeholder input
- Use the identified background datasets
- Incorporate material EPDs

Available at: https://www.fhwa.dot.gov/pavement/lcatool/
EPDs: Potential Future Developments

Key considerations
- EPD comparability
- PCR harmonization

EPD uses
- EPDs as communication tools
- EPDs as procurement aid
- EPDs as data source

Ultimate goal
- Ensure environmental improvements
  - Materials
  - Pavement

Current status
- EPDs as communication tools

Path forward

For more information: Rangelov et al. (2020) Use of environmental product declarations (EPDs) of pavement materials in the United States of America (USA) to ensure environmental impact reductions. Journal of Cleaner Production, p.124619.
Resources

http://www.fhwa.dot.gov/pavement/sustainability

**Education**

- Pavement LCA Framework

**Research**

- LCA fit in transportation decision-making

**Deployment**

- LCAPave Tools

- EPDs in Green Public Procurement

- Pilot projects with State DOTs

- Mobile Pavement Technologies Centers

- LCA of recycled plastics in pavements

- LCA of ground tire rubber in pavements

- Informing pre-engineering with ICE Tool

- Technical articles

- Webinars

- Tech briefs, studies
Topic: FHWA SPTWG
Meeting: Earth Day 2022
Time: Apr 22, 2022
01:30 PM ET
Join Zoom Meeting
Meeting ID: 956 0423 7690
Passcode: 483356

Going Green? We Can Help!
BIG Announcement – Be There!
04.22.22
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http://www.fhwa.dot.gov/pavement/sustainability