

# Sustainable Pavements Technical Working Group (SPTWG) Earth Day Special Session

April 22, 2022



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# Agenda

- Opening Remarks
- FHWA DOT Climate Challenge Announcement
- Showcase Presentations
- Question and Answer
- Closing Remarks

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U.S. Department of Transportation  
Federal Highway Administration

# SPTWG Meeting Objective

Migdalia Carrion

Sustainable Pavements Program (SPP) Program Manager

# Acronyms

- EO Executive Order
- EPD Environmental Product Declaration
- LCA Life Cycle Assessment
- LCCA Life Cycle Cost Analysis
- PCR Product Category Rules
- SPTWG Sustainable Pavements Technical Working Group

# 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



# Sustainable Pavements

- Achieve the engineering goals for which it was constructed.
- Preserve and (ideally) restore surround ecosystems.
- Use financial, human, and environmental resources economically.
- Meet basic human needs, such as health, safety, equity, employment, comfort, and happiness.

## Balance of the Triple Bottom Line

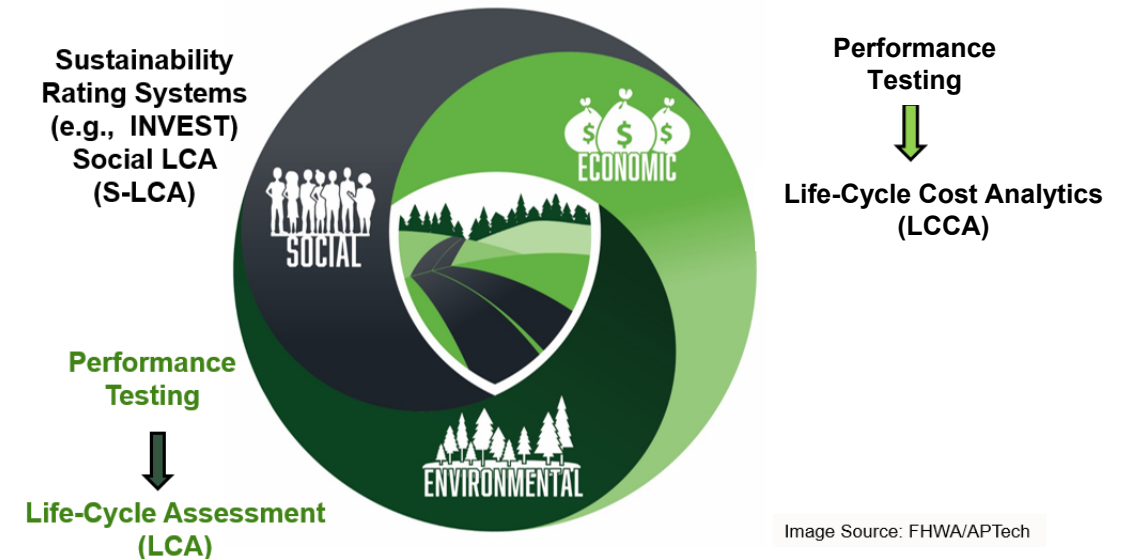


Image Source: FHWA/APTech



# Sustainable Pavements Technical Working Group (SPTWG)

- Stakeholders from highway agencies, academia, and industry.
- Role of SPTWG:
  - Share information on pavement sustainability
  - Provide input to FHWA on sustainability
  - Review documents and deliverables
  - Assist in pilot studies and implementation



# Stakeholder Engagement

## Agencies

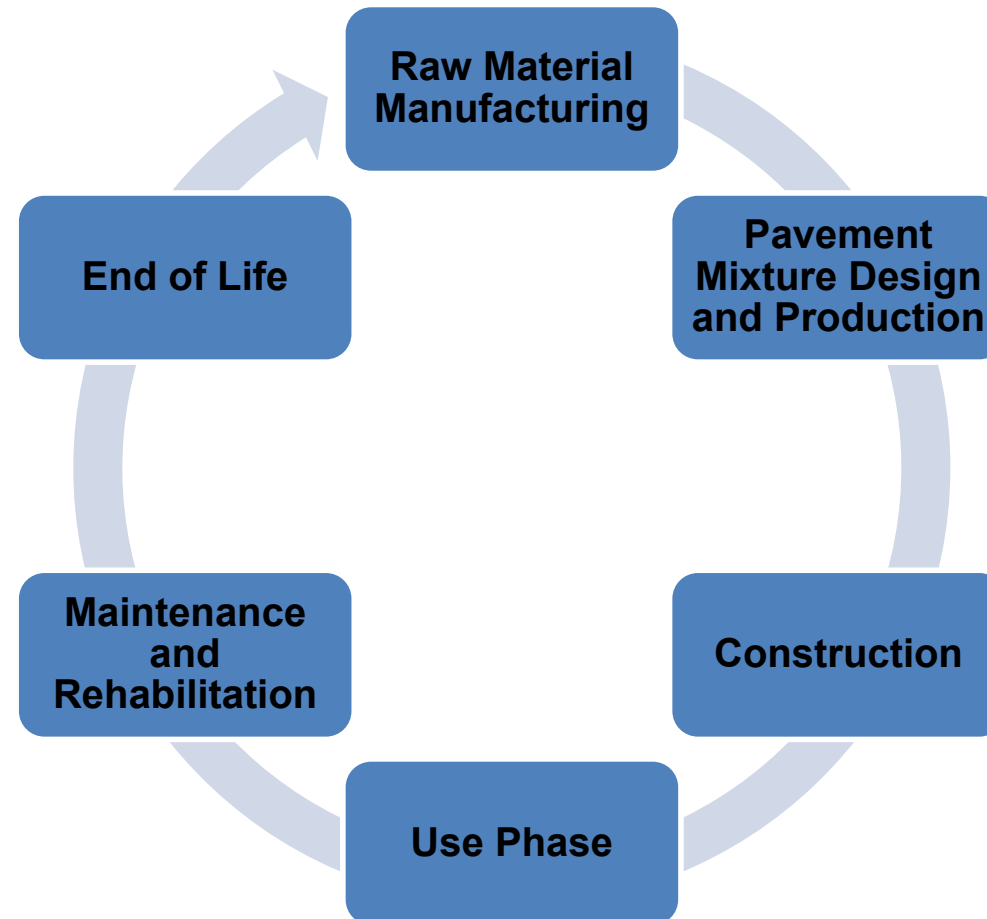
- State Departments of Transportation
- Local Agencies
- Federal Agencies

## Academia

- Pavement Materials
- Construction

## Industry

- Design Engineers
- Life Cycle Assessment (LCA) Professionals
- Material Manufacturers
- Construction Contractors



# “Feel Goods” vs. Metrics

- Incorporate waste materials
- Recycle
- Increase durability
- Use of local materials

**You can't improve what you don't measure**

# Green Public Purchasing Initiatives



 \* States that legislated green public purchasing

 ^ States that have considered green public purchasing legislation in the past 2 years  
Information collected from State legislative websites.

# Executive Order on Federal Sustainability

- EO 14057 – Catalyzing Clean Energy Industry and Jobs Through Federal Sustainability<sup>1</sup>



## **Section 102 (a)(v)**

Net-zero emissions from Federal procurement, including a Buy Clean policy to promote use of construction materials with lower embodied emissions.

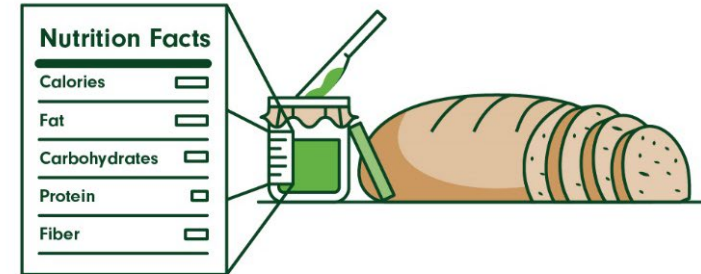


## **Section 303**

The Buy Clean Task Force provides recommendations to the Chair of the Council on Environmental Quality (CEQ) and the Director of the Office of Management and Budget (OMB) on policies and procedures to expand consideration of embodied emissions and pollutants of construction materials in Federal procurement and federally funded projects.

# Quantification Methods

- Life Cycle Assessment (LCA)
  - Method to quantify environmental impacts of products and processes over life cycle
  
- Environmental Product Declarations (EPD)
  - LCA-based, transparent and verified report of environmental impacts of a product

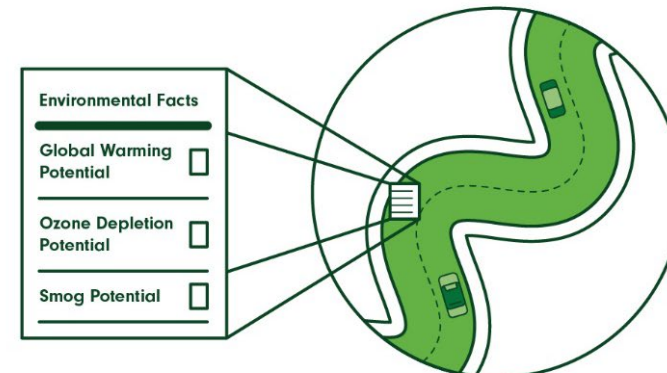


Similar to nutrition labels for food products, EPDs communicate critical environmental information on pavement materials to the customer.

Using guidance from ISO and European Standards,

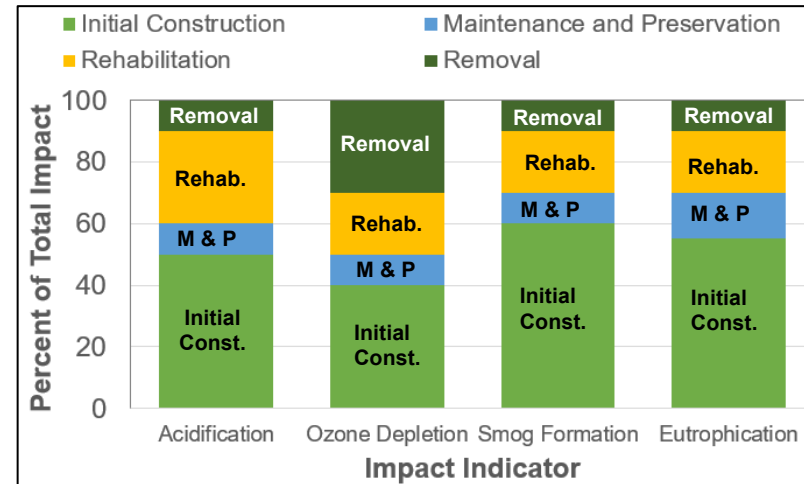
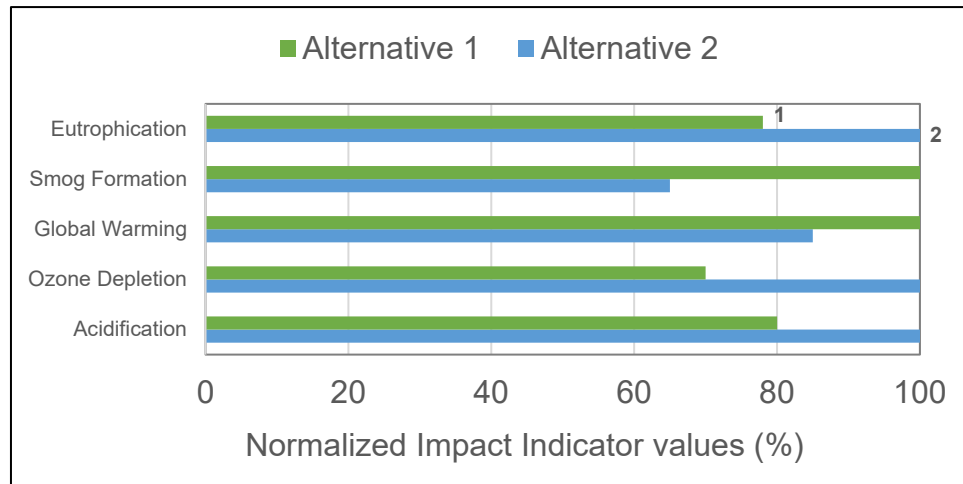


An LCA is conducted for the product, process, or system.



# LCA Benchmarking Tool- LCA Pave

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



Available at: <https://www.fhwa.dot.gov/pavement/lcatool/>



U.S. Department of Transportation  
Federal Highway Administration

# FHWA DOT Climate Challenge Announcement

LaToya Johnson

Team Leader, Pavement Design and Performance



# Climate Challenge

## Quantifying the Emissions of Sustainable Pavements

State DOTs explore the use of EPDs as a standard practice to inform pavement material and design selection for enhancing sustainable pavement practices and quantify the emissions and impacts of those practices.



For the latest information, visit the website: <https://highways.dot.gov/climatechallenge>

# Who Can Participate?

Stakeholders interested in using LCA and EPDs to achieve more sustainable outcomes:

- **State DOTs – lead participants**

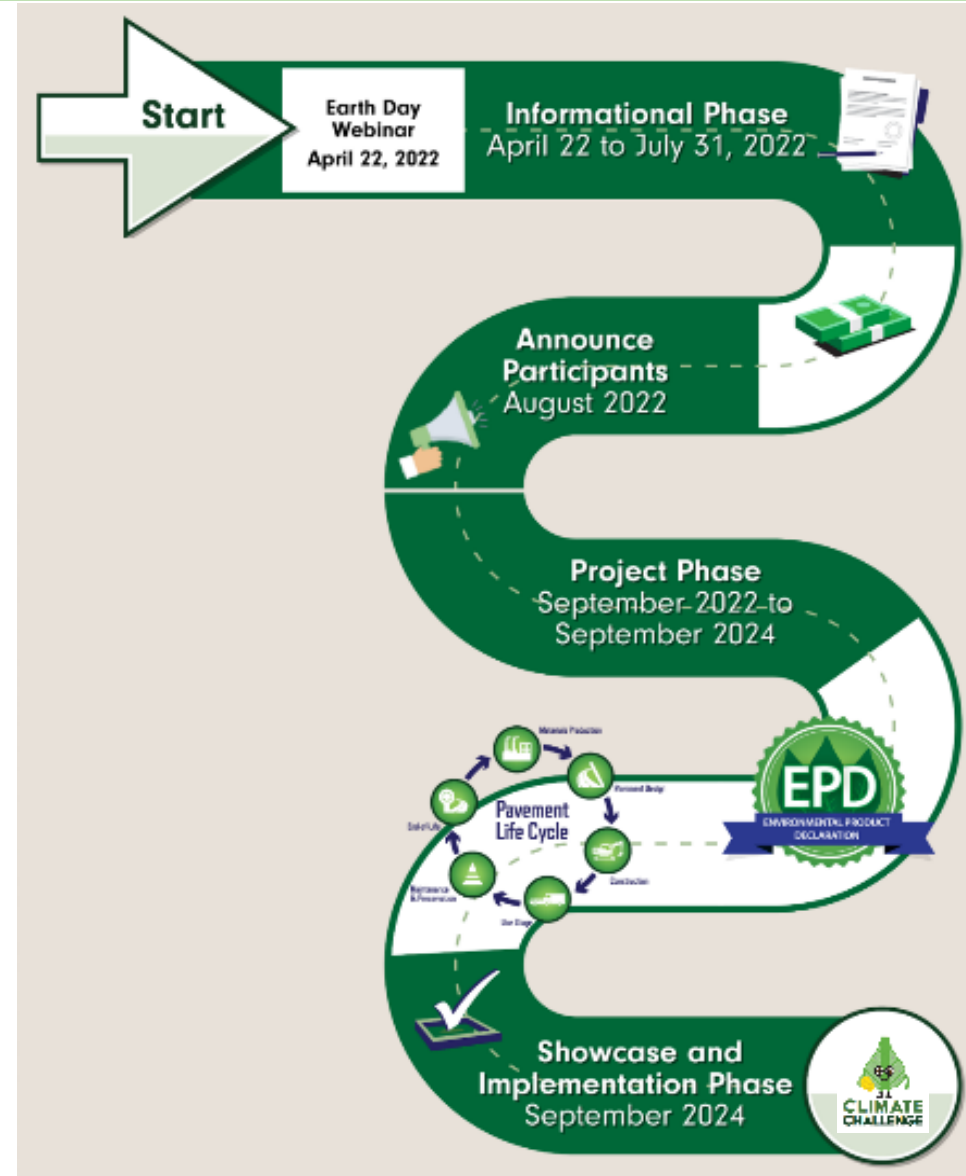
Working closely with:

- Academia
- EPD program operators
- Industry organizations
- Material manufacturers



# What Is the Process?

1. Informational Phase
2. Project Phase
3. Showcase and Implementation Phase



# Informational Phase

- Host outreach activities
  - Earth Day webinar
  - Informational webinars for State and local agencies
  - Listening session with industry
- Interested stakeholders develop project proposals
- Selection of future challenge participants



# Project Phase

- Participants will conduct their projects according to proposals.



# Showcase and Implementation

- Host peer exchanges and webinars to showcase projects
- Develop case studies
- Create reports for DOTs

## Goal:

- Share lessons learned
- Identify the next steps for implementation





## How to Participate?

- State DOTs will submit Climate Challenge proposals to FHWA (More details coming soon)
  - Project scope
  - Expected outcomes
  - Technical assistance and funding needs
- FHWA will meet with participants to discuss the Challenge.

# Project Requirements

## Projects must meet the goals of the Climate Challenge:

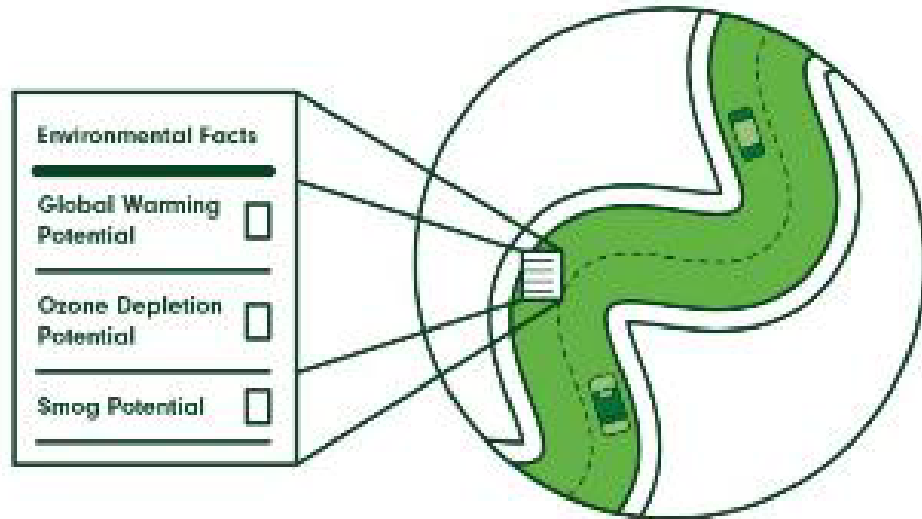
- Quantify GHG emissions of pavements through the implementation of LCA and EPDs
- Demonstrate collaboration among stakeholders including:
  - Academia
  - Industry organizations
  - EPD program operators
  - Material manufacturers





# Examples of Potential Projects

- Develop plans for carbon reduction
- Implement EPDs and LCA on select projects
- Implement pilots:
  - Techniques
  - Strategies
  - Materials
  - Collect/develop additional data



# How are Projects Selected?

Challenge participants with eligible proposals will be selected on a rolling basis until funding is no longer available.

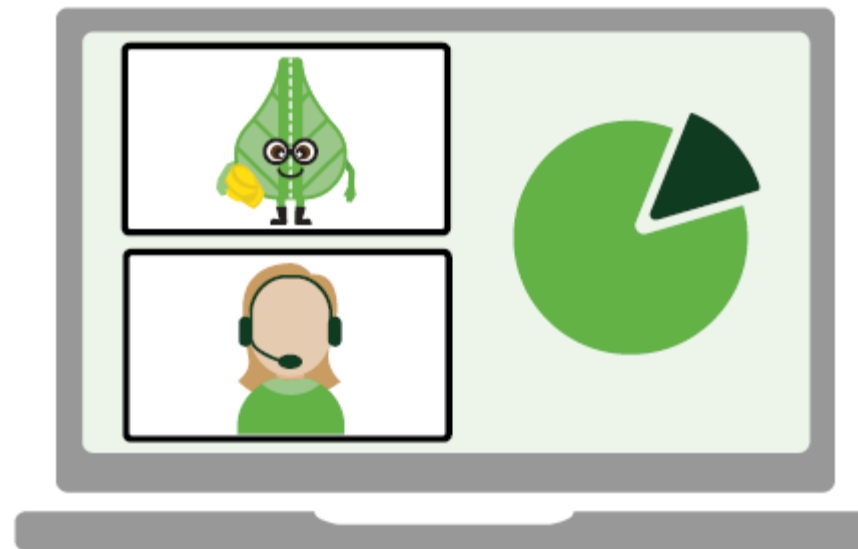


- **Up to \$500k** will be available per participant
- Funding may require a match contribution by the DOT



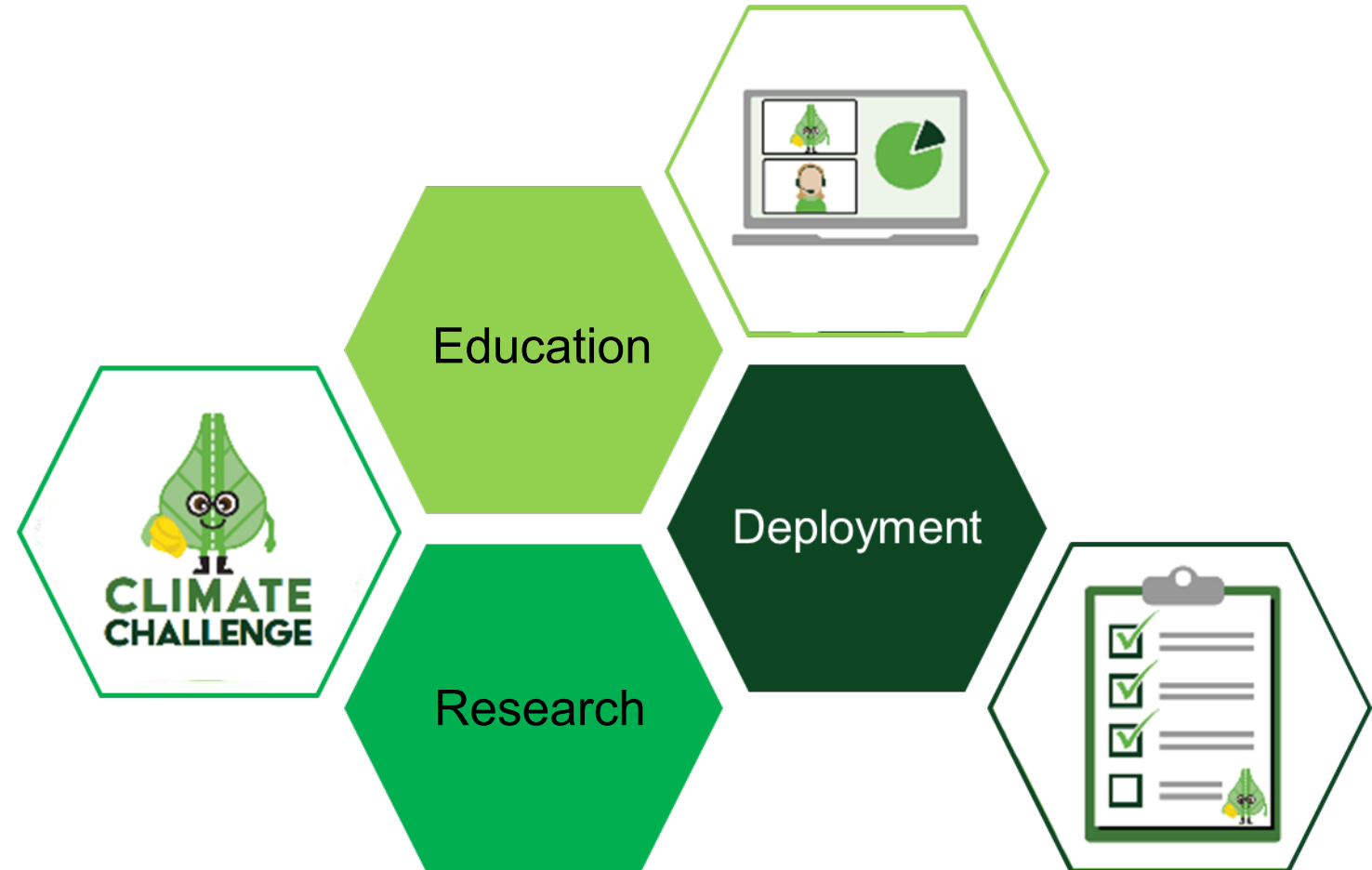
# Next Steps

- Visit website for the latest information:  
<https://highways.dot.gov/climatechallenge>
- Submit project proposal. FHWA expects to accept proposals starting July 1, 2022.



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



# Closing Remarks

Migdalia Carrion

# SPTWG Member List

Amlan Mukherjee	Jim Mack	Leif Wathne
Benjamin Bowers	Jim Pappas	Mary Jane Hayden
Bouzid Choubane	Jo E. Sias	Randy Kirchain
Chaitanya Bhat	Joe Haslag	Russell Thielke
Craig Wieden	John Harvey	Senthil Thyagarajan
Curt Turgeon	Joseph Shacat	Steve Olmsted
Gerry Huber	Josh DeFlorio	Tim Greutert
Greg Halsted	Justin Schenkel	Vincent Allison
Heather Dylla	Kyle T. Brashear	Zechariah Heck

# SPTWG June Meeting

- The next meeting for the SPTWG is June 22 & 23 in Lakewood, Colorado.
- The meeting will focus on the update and overhaul of the Sustainable Pavements Program Road Map.
- The number of attendees is capped – if you would like to attend, reach out to Migdalia Carrion ([migdalia.carrion@dot.gov](mailto:migdalia.carrion@dot.gov)).

# Climate Challenge

## Quantifying the Emissions of Sustainable Pavements

- FHWA's Climate Challenge will assist State DOTs in quantifying GHG emissions of pavement materials and designs and encourage the use of sustainable pavement practices.
- What we ask from you is two things: **data** and **leadership**:
  - We need better data to understand which products are most effective for sustainable transportation infrastructure.
  - We need your leadership in addition to your vision, ideas, and collaboration to help us bring our vision to life.



# Would You Like To Get Involved?

- Join the newsletter – [Join to become a SPP Friend](#)
- Request an LCAPave Demo – send an email to [migdalia.Carrion@dot.gov](mailto:migdalia.Carrion@dot.gov)
- Learn more about the FHWA Climate Challenge – [FHWA Climate Challenge Website](#)
- Learn more about our resources on the next slide

# Resources

- <http://www.fhwa.dot.gov/pavement/sustainability>



## Education

[Pavement LCA Framework](#)

[Webinars](#)

[Tech briefs, studies](#)

[Technical articles](#)



## Research

[LCA fit in transportation decision-making](#)

[EPDs in Green Public Procurement](#)

[LCA of recycled plastics in pavements](#)

[LCA of ground tire rubber in pavements](#)



## Deployment

[LCAPave Tools](#)

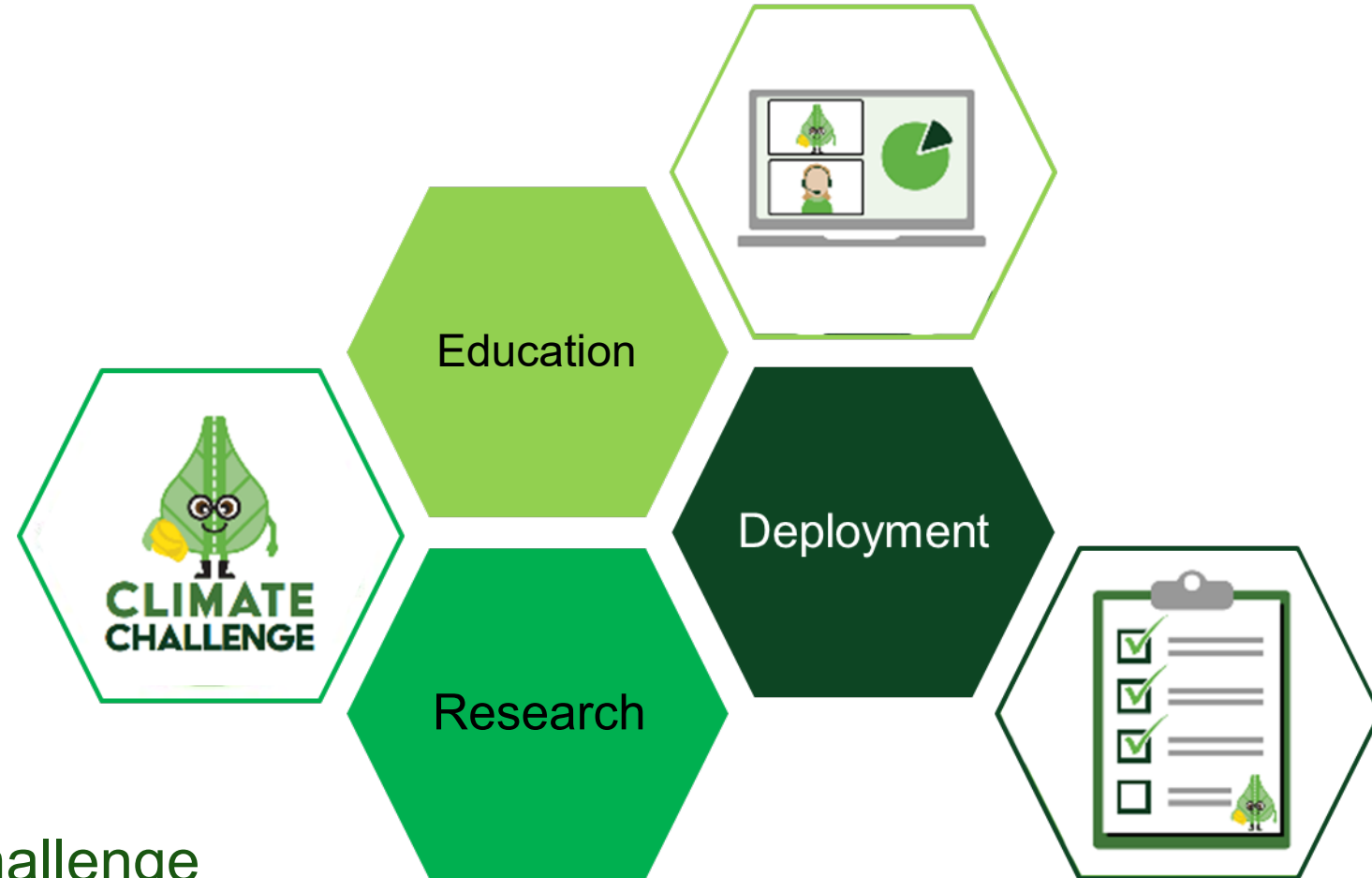
[Pilot projects with State DOTs](#)

[Mobile Pavement Technologies Centers](#)

[Informing pre-engineering with ICE Tool](#)

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<https://highways.dot.gov/climatechallenge>

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Thank You!