



NAPA and APA Update

Advancing the Asphalt Pavement Industry

Amy Miller, P.E.
National Director, APA
Vice President Member and Industry Alliances, NAPA

Northeast Asphalt User Producer Group
November 2, 2022 – Albany, NY

About the National Asphalt Pavement Association...

- Our Vision: *Asphalt pavements' quality and value pave the way for enhanced mobility and a sustainable transportation network.*
- Our Mission: *The National Asphalt Pavement Association works to advocate, advance, and support the asphalt pavement industry.*



Industry Values

NAPA Strategies

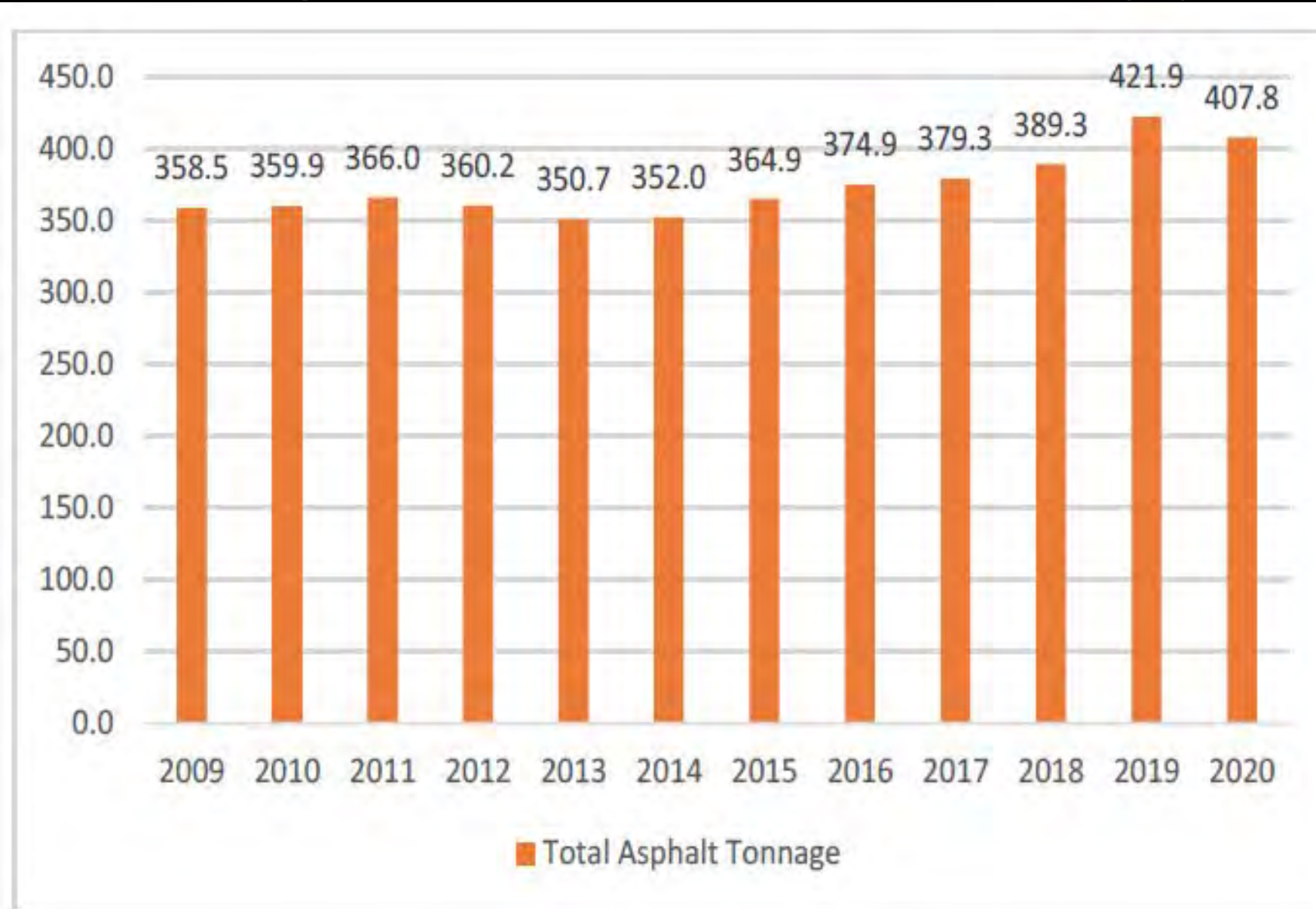
*Advancing
Asphalt Pavements*

- **OUR INDUSTRY:** Longevity & Growth
- **OUR PRODUCT:** Quality & Innovation, Sustainable
- **OUR NATION:** Highways Investment, & Smart Regulations
- **OUR PEOPLE & ENVIRONMENT:**
 - Health & Safety, Environment
 - Workforce: Recruit & Retain
- **THE POWER OF MANY:**
Engagement for Advancement



Asphalt Tonnage Produced in the U.S., by year

Millions of
Tons





Changing Landscape

- **Infrastructure Investment and Jobs Act (IIJA) or Bipartisan Infrastructure Law (BIL)**
- **General Services Administration**
- **Inflation Reduction Act (IRA)**
- **Federal & State Buy Clean Actions**

An Industry-Wide Vision

The Road Forward

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

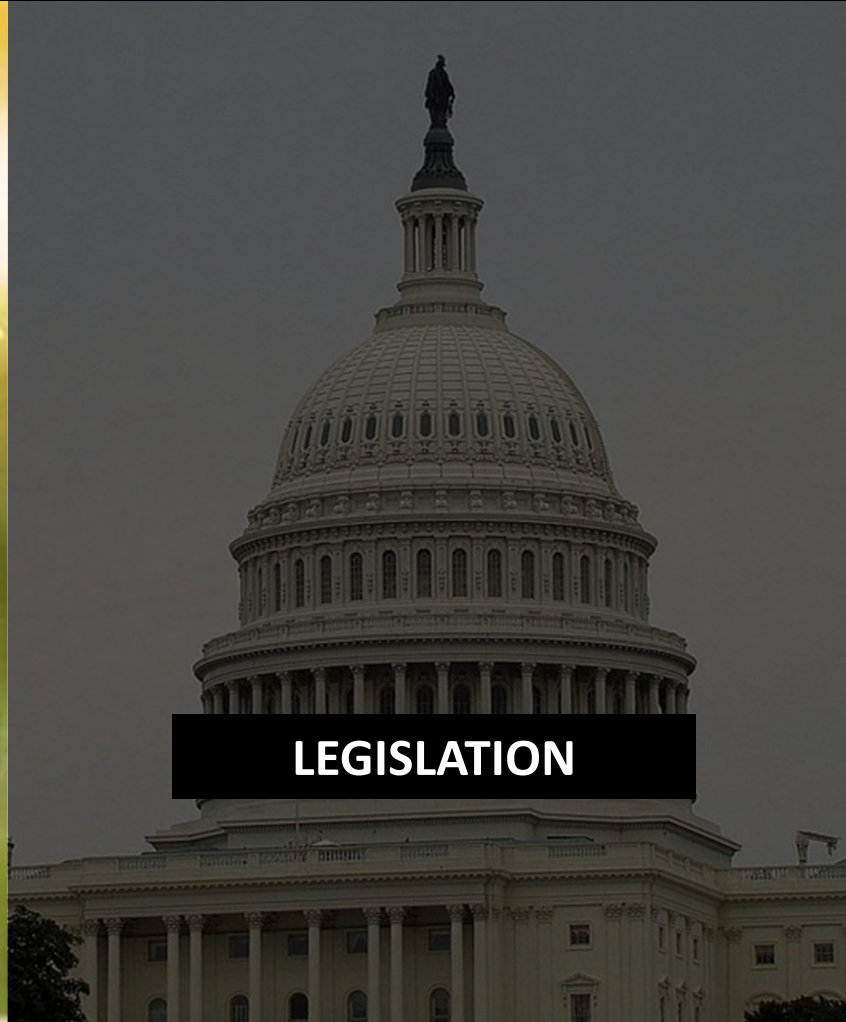


NATIONAL ASPHALT
PAVEMENT ASSOCIATION

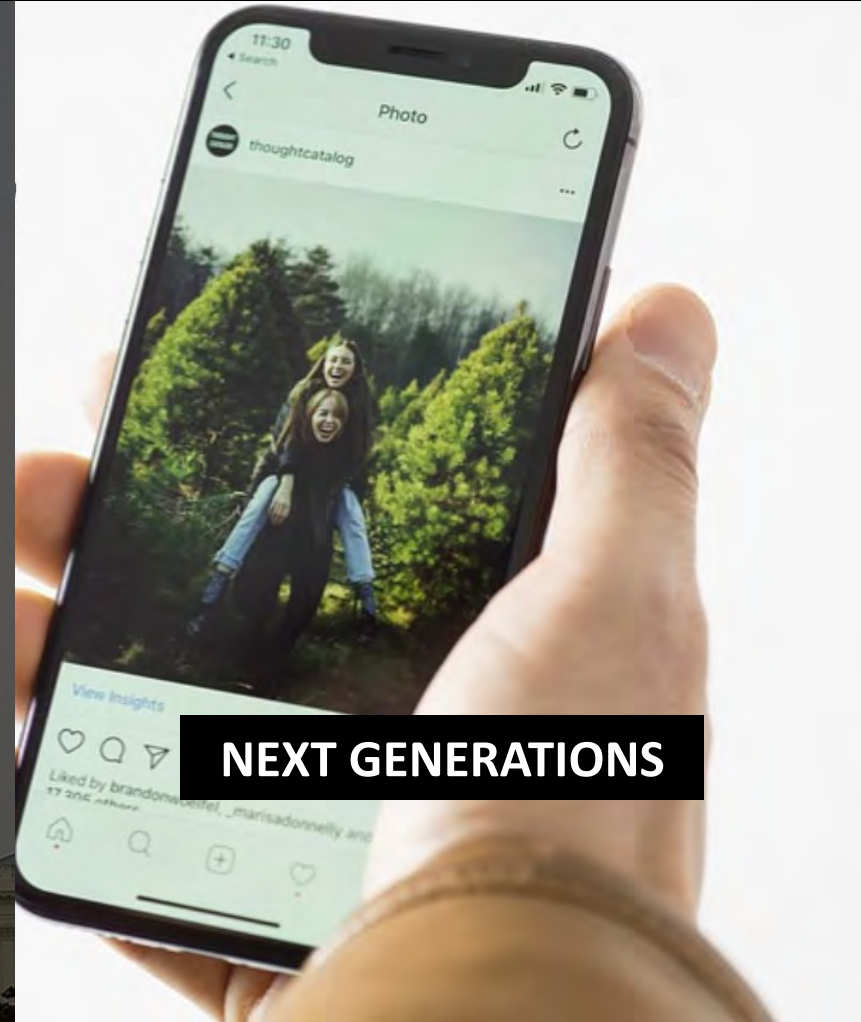
Why?



PROFIT



LEGISLATION



NEXT GENERATIONS



Industry Goals & Gaps



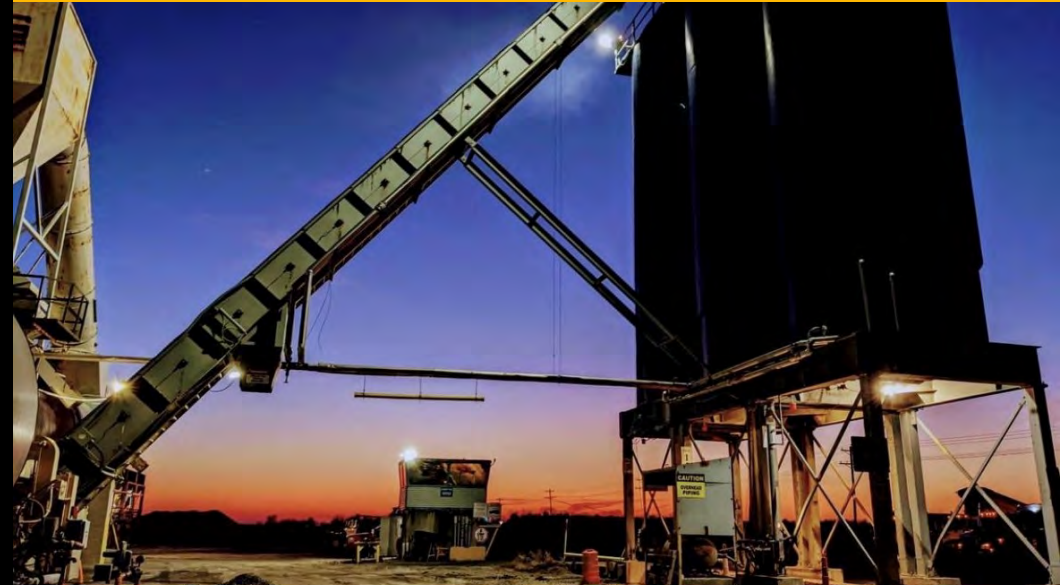
Net Zero Production and Construction

- Key drivers for emissions during production and construction
- Alternative and renewable fuels
- Align policies, procedures, and specs
- WMA technology
- Advanced logistical technologies
- Best practices
- Capital investments

Industry Goal 1

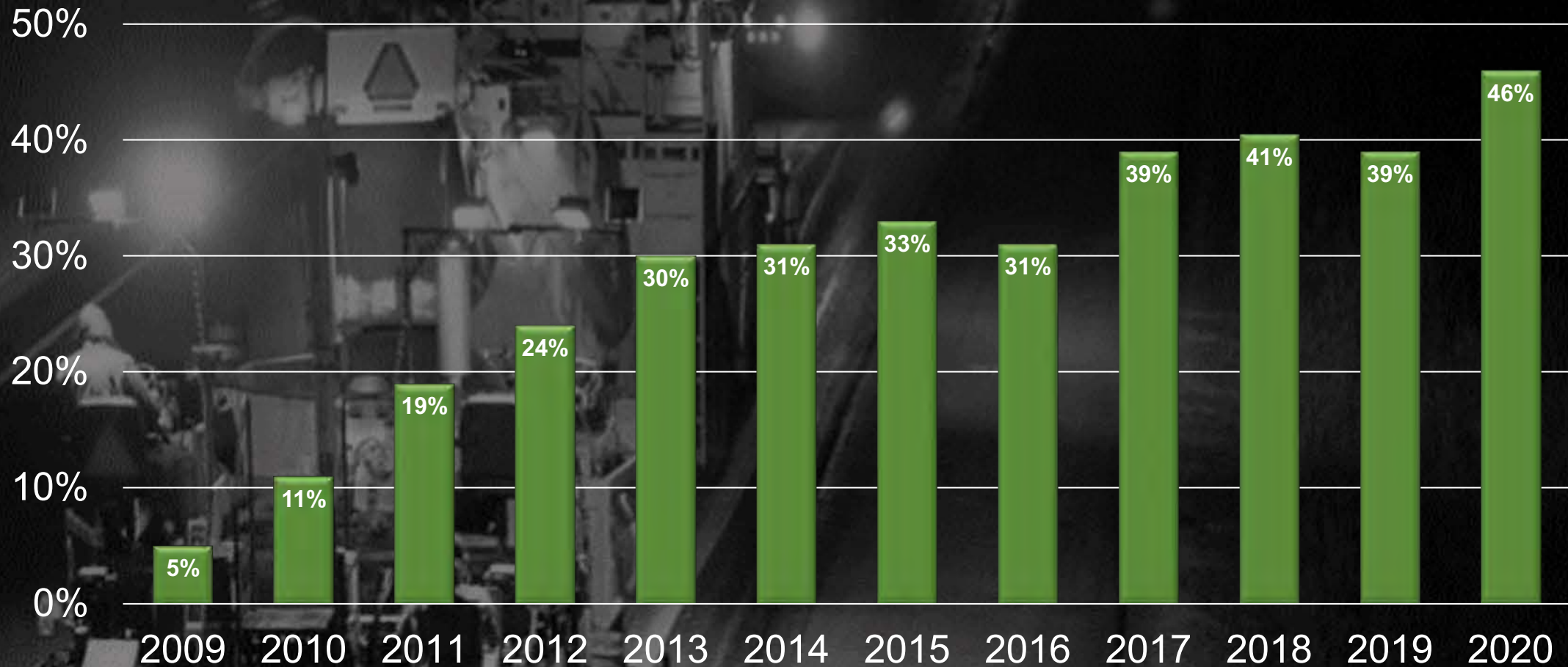
Scope 1 Emissions

Achieve net zero carbon emissions during asphalt production and construction by 2050.



Warm Mix Asphalt (WMA) Technologies

Percentage of Total Asphalt Production in the U.S.



RESEARCH & IMPLEMENTATION GAPS

- Research technologies that would allow a 50% reduction in energy and associated emissions required to produce asphalt mixtures.
 - WARM MIX & HALF WARM MIX
 - COLD CENTRAL PLANT RECYCLING
 - BIOFUELS

Industry Goal 1

Scope 1 Emissions



Pavement Quality, Durability, and Use

- Alternative construction scheduling
- Perpetual pavements
- Rolling resistance
- Contract incentives for improved quality and improved vehicle fuel economy

Industry Goal 2

Scope 3 Emissions

Partner with customers to reduce emissions through pavement quality, durability, longevity, and efficiency standards by 2050



RESEARCH & IMPLEMENTATION GAPS

- Develop a framework for owners to optimize pavement maintenance to reduce vehicular emissions by maintaining pavement smoothness.
- Rolling resistance
 - Structural Response Models
 - Alternative Scheduling
 - User Delay Impacts

Industry Goal 2

Scope 3 Emissions



Net Zero Materials Supply Chain

- More recycled material
- Balanced Mix Design
- Industry summits
- New technology and materials

“We are America’s No. 1 most recycled product,”
NAPA’s Jay Hansen told *The New York Times*.

Industry Goal 3

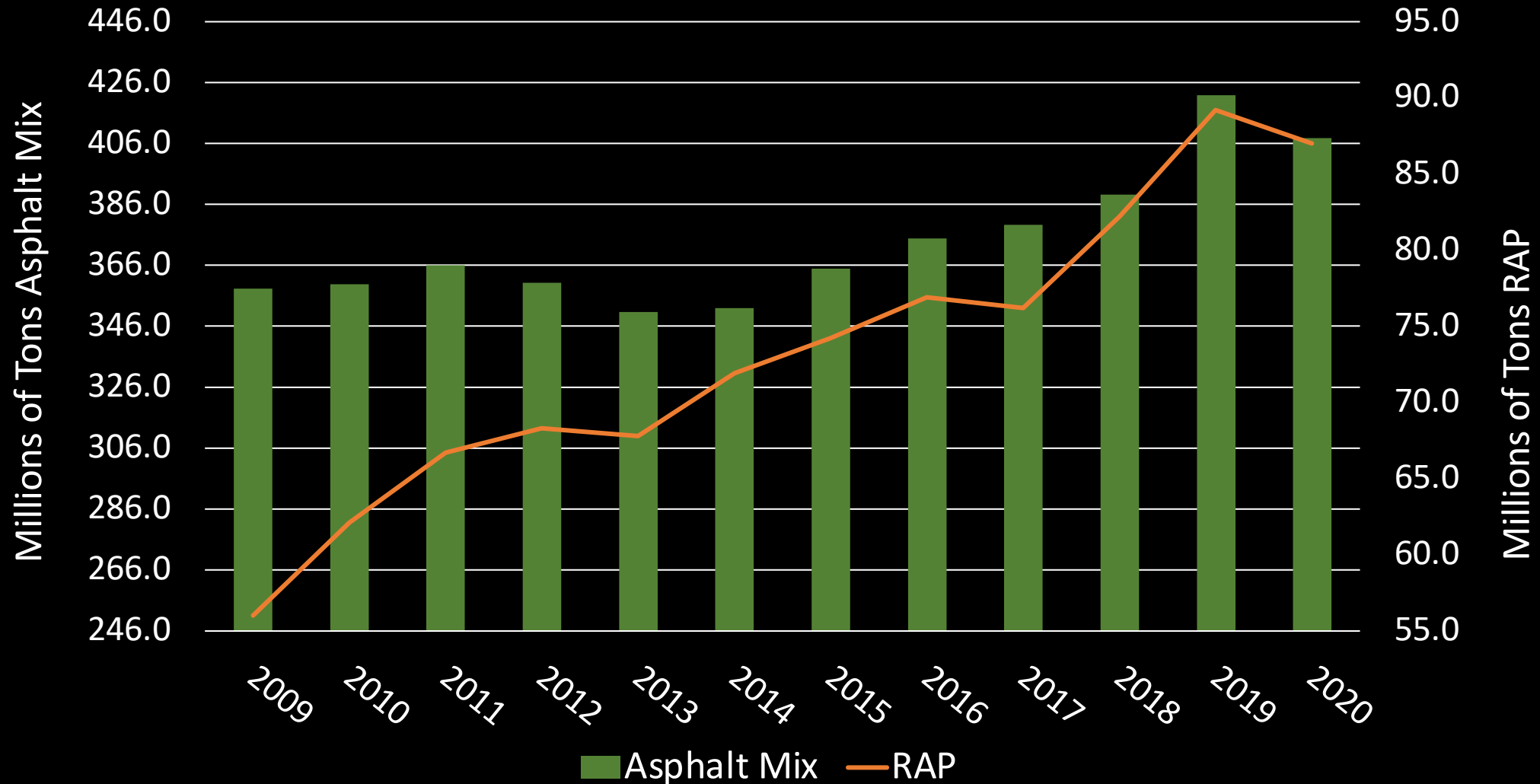
Scope 3 Emissions

Develop a net zero materials supply chain by 2050



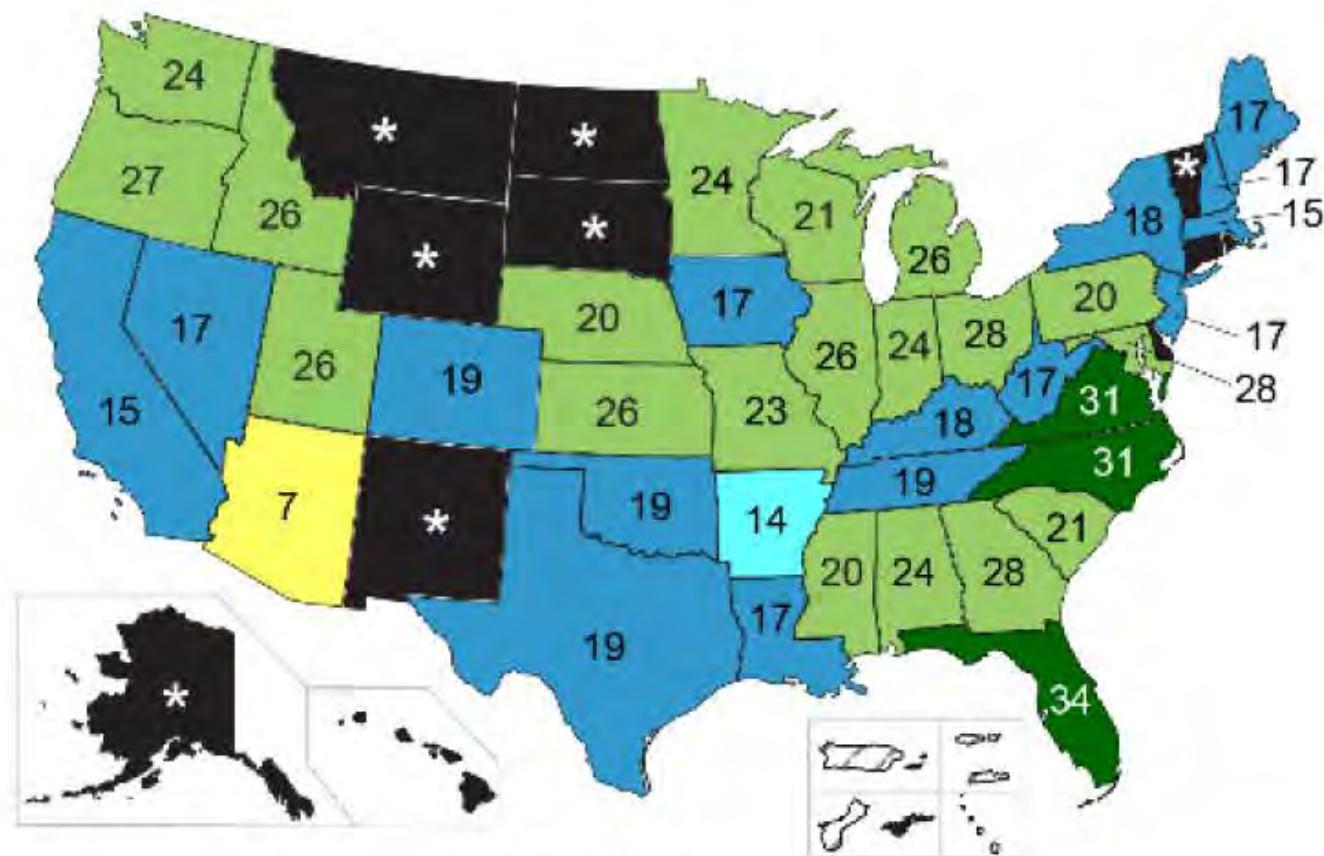
Asphalt Mix and RAP Tonnage

Total Production and Use in the U.S.



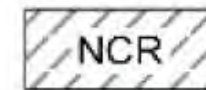
% RAP Used by State

2020 Map

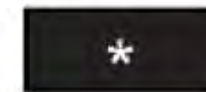


2020

Average RAP %



NCR No Cos. Reporting



< 3 Cos. Reporting



0-9



10-14



15-19



20-29



≥ 30

RESEARCH & IMPLEMENTATION GAPS

- New forms of asphalt binder and/or binder replacements
- Rapid assessment of new materials
- Education on use and acceptance of performance tests used in BMD leading to specification development that encourage innovation
- Research allowing industry to increase RAP content to greater than 40%

Industry Goal 3

Scope 3 Emissions





INDUSTRY GOALS

RESEARCH

PARTNERS

LEARN MORE



AsphaltPavement.org/Forward

Industry Values

NAPA Strategies

*Advocate
Advance
Support*

- ***OUR NATION:*** Highways Investment & Smart Regulations
- ***OUR PEOPLE:*** Workforce
 - Health & Safety
 - Recruit & Retain
- ***OUR INDUSTRY:*** Longevity & Growth
- ***OUR PRODUCT:*** Quality & Innovation
- ***THE POWER OF MANY:*** Engagement for Advancement



MISSION:

As a trusted resource, the Alliance establishes asphalt as the pavement of choice by detailing proven advantages of asphalt pavement in the areas of safety, value, performance, and the environment.



OUR INDUSTRY: Longevity & Growth

- Engage and educate stakeholders, such as pavement owners and policy makers, to advance asphalt as the pavement of choice for mobility solutions.
- Extensive resources and efforts among 42 Associations
- A trusted resource for asphalt knowledge and solutions.

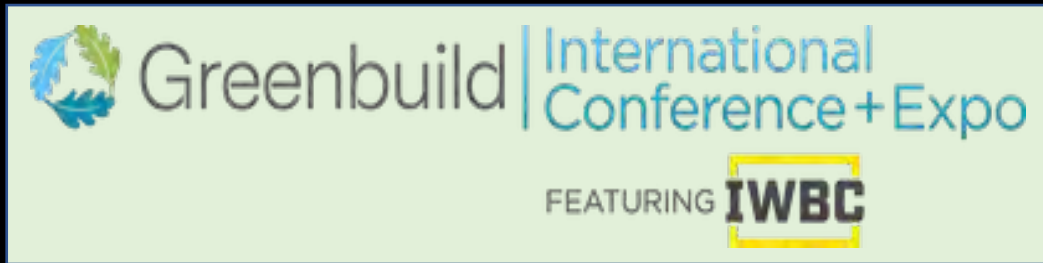




A Unified Industry –
a Trusted Partner

DriveAsphalt.org





These shows have more than 50,000 attendees.



2022 ASHE National Conference



Pavement Design Learning Opportunities

EXPERIENCES & BEST PRACTICES OF LOCAL ROAD OWNERS

September 27
2:00-3:30 p.m. EDT

This webinar is aimed at helping local decision makers, pavement managers, and pavement engineers understand the short and long-term benefits asphalt pavement provides. Attendees will hear first-hand experiences from municipalities as they discuss best practices in owning and maintaining their road systems.

Top 3 Reasons to Attend:

- 1 Learn about best practices in local design, materials, and construction
- 2 Hear first-hand from municipalities regarding asphalt pavement solutions
- 3 Learn about the importance of working collaboratively with industry partners to solve problems

Guest Speakers:

Dennis Bonds

City of Tupelo, MS
City Engineer

Judge Gary Moore

Buttume County, KY
Judge-Executive

Dan Roberts

Department of Public Works Engineering, Douglas County, CO
Manager of Engineering Permits & Inspections



Up to 1.5 hours of PDH credits for professional engineers will be provided with training



FREE Webinar
August 25/2:00 PM EDT

Designing a Perpetual Pavement

This webinar will discuss material selection and mixture design to optimize Perpetual Pavement performance, discuss current perpetual design practices, and present best practices for construction of high quality, high performance pavements.

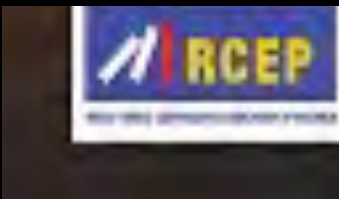


PARTICIPANTS WILL:

- 1 Learn the chief advantages of Perpetual Pavements
- 2 Be able to describe the functions of the various material layers in Perpetual Pavements
- 3 Understand the principle design features of Perpetual Pavements



Speaker
David E. Newcomb,
P.E., Ph.D.
Consultant



Pavement Design

Perpetual Pavement Design

Perpetual Pavement Cross-Section

Typical Depths

1.5 – 3"

4 – 7"

3 – 4"

Materials

High Quality AC

High Modulus,
Rut Resistant AC

Fatigue Resistant AC

Strong
Pavement
Foundation
(consider drainage)

Asphalt.

AMERICA RIDES ON US

Newcomb, 2001

FREE Webinar

October 13/2:00 PM EDT

Perpetual Pavements by Conversion

This webinar will introduce traditional and conversion Perpetual Pavement design concepts, with emphasis on the development of the design and application using **PerRoad** and **PAVEExpress**. Real world case studies will be presented.



PARTICIPANTS WILL:

- 1 Learn the fundamental concepts needed to convert an existing pavement into a Perpetual Pavement
- 2 Understand how **PerRoad** and **PAVEExpress** can be used to facilitate Perpetual Pavement design by conversion
- 3 See real-world examples of converted Perpetual Pavements



Speaker

Dave Timm, Ph.D.
Brasfield & Gorrie Professor
of Civil & Environmental
Engineering at Auburn
University



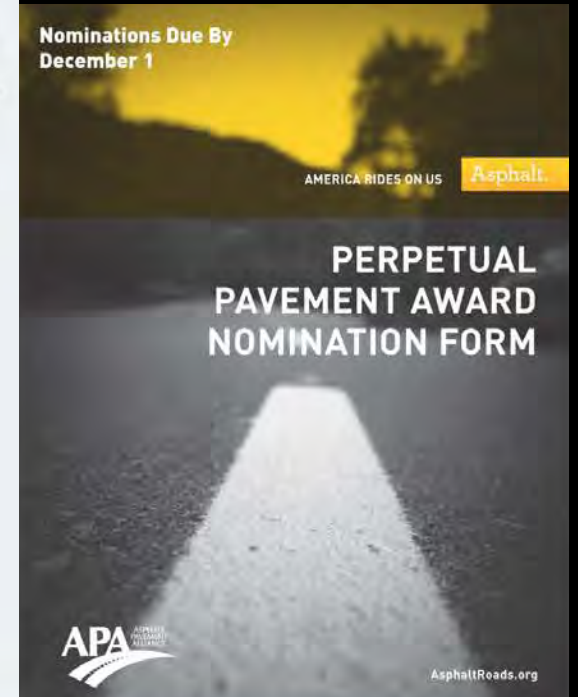
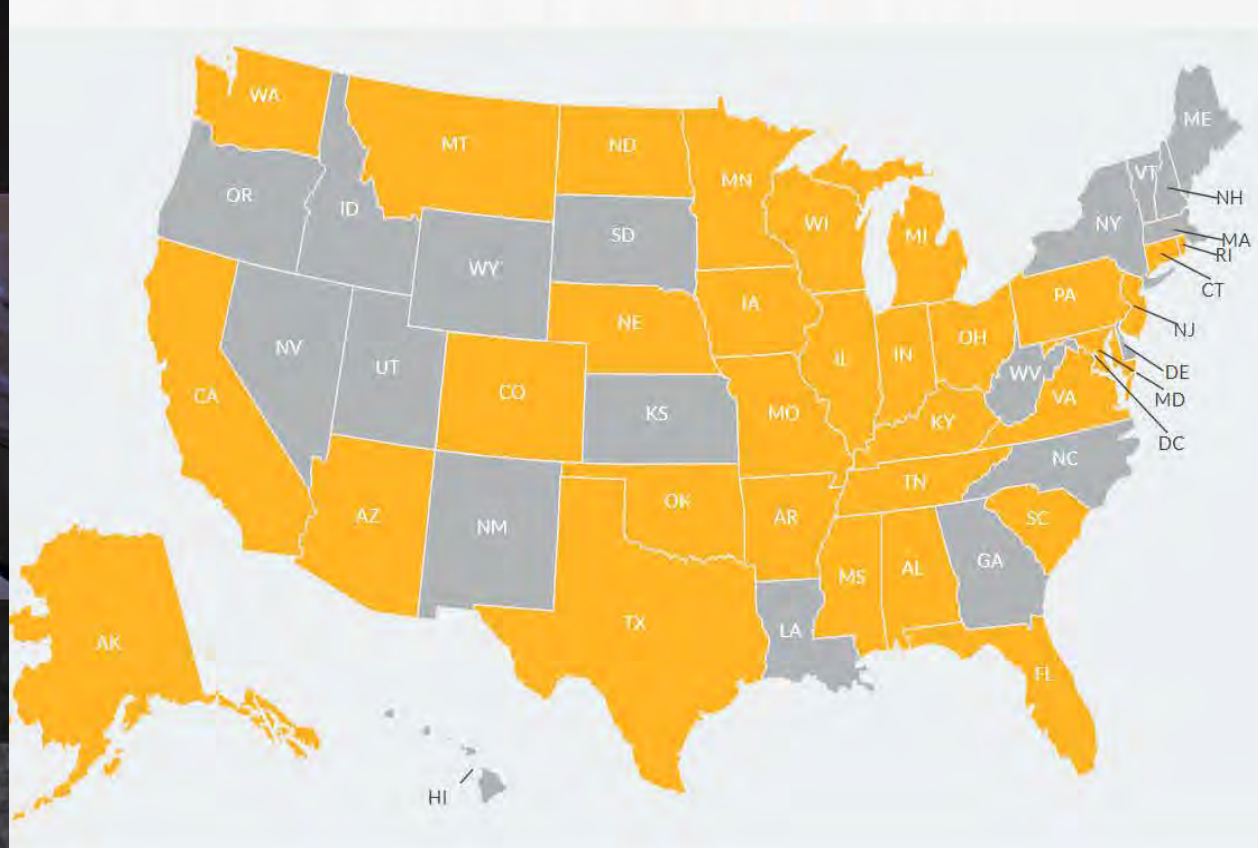
Perpetual Pavement Awards

This new Perpetual Pavement Award (PPA) celebrates long-life asphalt pavements that reflect the characteristics expected from Perpetual Pavements: excellence in design, quality in construction, and value to taxpayers.



Two New Awards Began in 2021!

Perpetual Pavement Award Winners



Oldest award winner to date: 91 years old in Ohio when awarded

Number of PPAs By NEAUPG States



STATE AGENCY	PPA BY PERFORMANCE	PPA BY DESIGN	PPA BY CONVERSION
CTDOT	2		
DelDOT			
MassDOT			
MDOT	7	1	
MaineDOT			
NHDOT			
NJDOT	3		
NYSDOT			
PennDOT	11		
RIDOT	1		
Vtrans			
DDOT			

PAVEXpress

A Simplified Pavement Design Tool



www.PAVEXpress.com

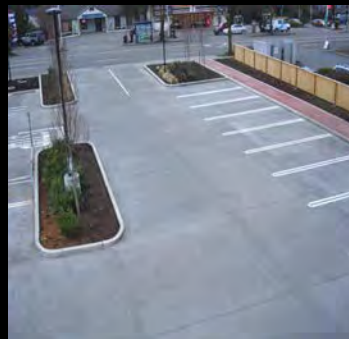
PAVEInstruct



www.PAVEInstruct.com

Private Markets

Market Segments



driveasphalt.org/resources/commercial-applications



ASPHALT PAVING IN PRIVATE MARKET APPLICATIONS

A FREE WEBINAR SERIES FOR CIVIL AND GEOTECHNICAL ENGINEERS

July 22 | 2:00 PM EDT

DEVELOPING QUALITY BID PACKAGES

One of the keys to building a successful asphalt paving project is to utilize a quality bid package. Bid packages that are vague, missing critical information, possible conflicts, and the possibility of the owner's expectations not being met. This webinar will enable attendees to produce bid packages that ensure cost control and a project delivered on time, on budget, and as planned.

Attendees will understand:

1. The importance of advertisement, award, & contract negotiation
2. How to develop key provisions to protect the owner & ensure bidding by qualified contractors
3. Best practices to develop a detailed bid item list

Speaker:
Dale Williams, P.E.
Vice President, National Association

ASPHALT PAVING IN PRIVATE MARKET APPLICATIONS

A FREE WEBINAR SERIES FOR CIVIL AND GEOTECHNICAL ENGINEERS

September 15 | 2:00 PM EDT

POROUS PAVEMENT IN COMMERCIAL ASPHALT PAVEMENTS

In this session you will get an understanding of porous pavement design and understand the details of proper construction practices, material selection and handling, and how to protect porous pavements.

Attendees' takeaways:

1. How to properly mix, handle, & install porous asphalt
2. Differences in behavior between conventional & porous asphalts
3. Rules of thumb, helpful tips, & how to avoid typical pitfalls

Speaker:
Thomas Baird, P.E.
Portland, Oregon

1.5 hours of PDH credits for professional engineers will be provided with training

REGISTER HERE

construction checklist

for asphalt parking lots

Industry Longevity



When asked, highway agency leaders report that their No. 1 challenge is funding (Edelman Berland, 2013). As federal funding for infrastructure investment continues to remain inadequate compared to the need, many agencies are looking to prioritize pavement performance, life-cycle cost analysis (LCCA), and pavement durability in their decision-making processes. Simply put, agencies want to ensure they get the most pavement life possible from each precious dollar of public money.

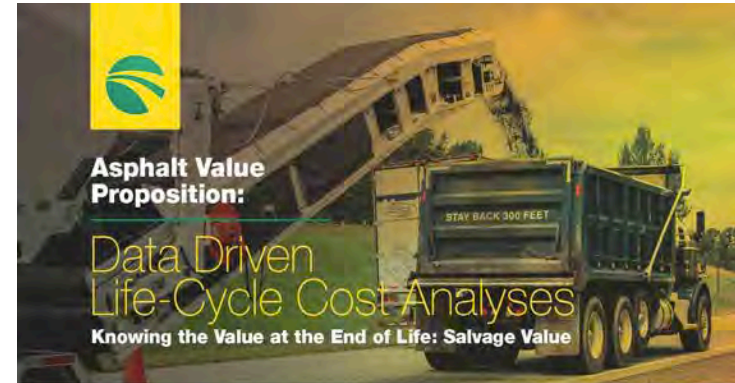
One data point commonly used to measure performance for both asphalt and concrete pavements is smoothness. Smoother pavements provide a quieter, more comfortable ride for drivers, and smoothness is a key factor in ensuring road user satisfaction (FHWA, 2002). Research has consistently shown that pavement smoothness has a significant influence on vehicle fuel economy for trucks and passenger cars (Wills et al., 2015), yielding as much as a 4.5% improvement in fuel economy (Sime et al., 2000). Beyond improved vehicle fuel economy, pavements that are smoother from the start require less maintenance, saving road owners \$1,295 annually for every lane-mile resurfaced (McGhee & Gillespie, 2006). One reason asphalt is the pavement of choice for engineers is the level of smoothness it provides. In fact, nearly 80 percent of pavement engineers and state highway agency officials say that

asphalt provides the smoothest pavement (Edelman Berland, 2013). Building high-quality smooth asphalt pavements positively impacts the bottom lines of both transportation agencies and the driving public.

Nearly 70% of state agencies' LCCA processes reportedly do not account for the use of materials or practices that increase pavement service life (SAPA, 2019). However, the Virginia Department of Transportation (VDOT) has studied the economic advantages of specifying and constructing smoother pavements (McGhee & Gillespie, 2006) and used the data gained to validate maintenance and rehabilitation cycles to account for the impact of smoothness on service life and vehicle operations.

Nearly 80 percent of pavement engineers and state highway agency officials say that asphalt provides the smoothest pavement.

In 1996, VDOT implemented the Special Provision for Rideability to incentivize the construction of smoother asphalt pavements. Projects in the incentive program showed an average increase in material cost of \$1.03 per ton of asphalt mixture. However, VDOT observed that these pavements were on average 8.9 in/mile smoother at initial construction. Over time, this increase in initial smoothness equates to an increase of seven years of functional life compared



"Life-cycle cost analysis (LCCA) is an evaluation technique applicable for the consideration of certain transportation decisions" (FHWA, 2002). This process includes the calculation of upfront development, capital and financing costs, discounted operating and maintenance costs, and end-of-life costs or the value associated with a specific asset or project (ASCE, 2014). To provide a reliable analysis of life-cycle costs, it is critical to ensure the right data and inputs are applied. While many states have databases of bid estimates for initial construction costing, the data to accurately estimate pavement maintenance and rehabilitation cycles, salvage value benefits, and end-of-life costs are more difficult to ascertain.

Recent guidance has been developed to aid roadway owners in applying a data-driven process to determine the true value of an asphalt pavement at the end of its life (Gu & Tran, 2019). It's estimated about one-third of state agencies currently consider the end-of-life of a pavement in their LCCA processes (SAPA, 2019); however, most agencies only look at the remaining service life of the last maintenance treatment not the salvage value (Gu & Tran, 2019). When considering pavement end of life

in LCCA, Federal Highway Administration (FHWA) supports two primary methods for calculating the value: salvage value (or value of materials that can be recycled) and remaining service life (the amount of life left in the pavement structure) (FHWA, 2002). This document will focus on salvage value.

A recent study showed that the material components of an asphalt pavement have a salvage value of approximately \$25.10 per ton

When considering salvage value, asphalt mixtures contain two recyclable ingredients: asphalt binder and aggregate. A recent study showed that the material components of an asphalt pavement have a salvage value of approximately \$25.10 per ton, because both the binder and aggregate can be reclaimed to make new asphalt mixtures. Not only can the old aggregate directly replace virgin aggregates, the asphalt binder can be reactivated to replace a portion of virgin binder (Gu & Tran, 2019). Concrete pavements consist primarily of portland cement powder, sand, water, and aggregate. Once the cement powder is used, it cannot be reactivated;

Asphalt.

AMERICA RIDES ON US



NATIONAL ASPHALT
PAVEMENT ASSOCIATION





FREE WEBINAR

Nov 21 2:00 PM EST

Perpetual Pavements

THE ROAD TO LASTING PAVEMENTS

Perpetual pavements represent the best opportunity for states - a long-lasting base with the opportunity to provide the smooth pavement road users expect. Even though perpetual pavements have existed around the U.S. for many years, road owners are just beginning to understand the long-term value provided by perpetual pavements. The webinar will feature three different award-winning perpetual pavement projects showcased and explained by the respective Department of Transportation and State Asphalt Pavement Association. This webinar is a great opportunity to learn why DOTs across the United States are choosing perpetual pavements to meet their needs and the demands of road users.

Project Highlights

- Illinois DOT, I-70 Project
- Maryland DOT, Route 100
- Washington DOT, Route 7

KEY TAKEAWAYS

1. Understand the advantages of perpetual pavements.
2. Discover the performance of perpetual pavements in different regions of various ages.
3. Learn about designing new pavements and converting existing to perpetual ones.



NAPA
NATIONAL ASPHALT PAVEMENT ASSOCIATION

APA
ASPHALT PAVEMENT ALLIANCE



Engineering RCEP
Road Construction Engineering Practice

REGISTER HERE



Thank you!
Amy Miller
amiller@asphaltroads.org



Women of Asphalt