



Asphalt Materials, Inc.

Driving Innovation: Insights on Supply Trends, Knowledge Gaps, and Emerging Opportunities

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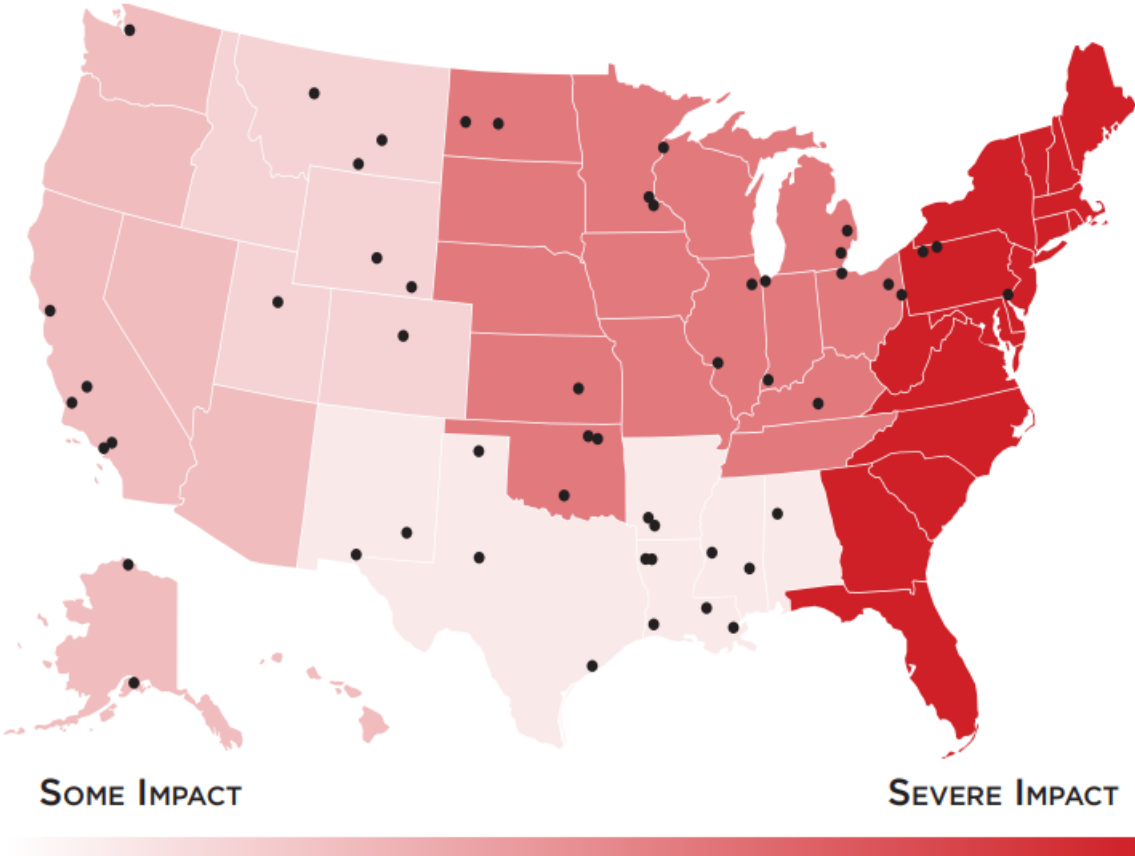


Where does asphalt come from?

...
Petroleum Asphalts: The majority of asphalt binder used today is derived from the refining of crude petroleum oils...

A look at the Midwest:

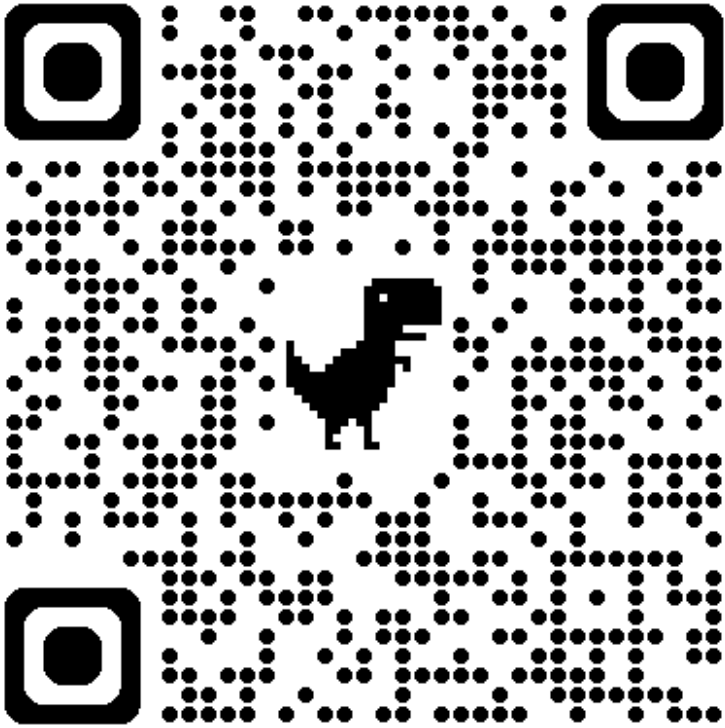
Potential Negative Impact of Buy America Restrictions on Asphalt Binder, by Region



Map Source: Energy Information Administration (EIA)

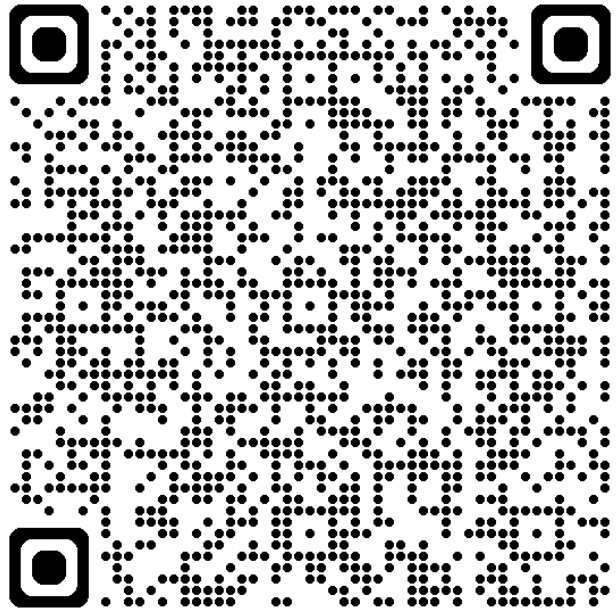
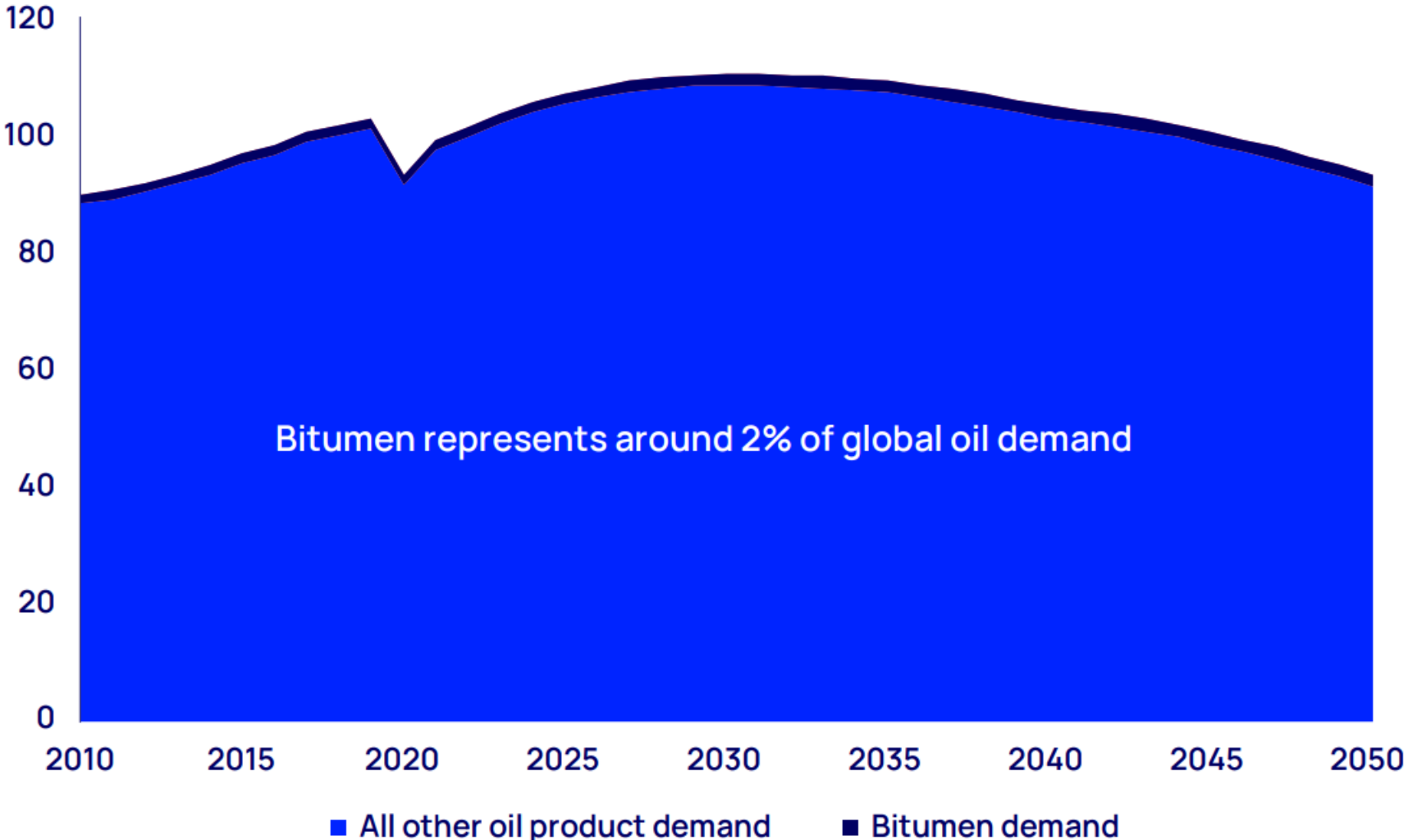
- Operable Refineries Capable of Producing Asphalt Binder

Source: AFPM United States Refining and Storage Capacity Report, August 2019



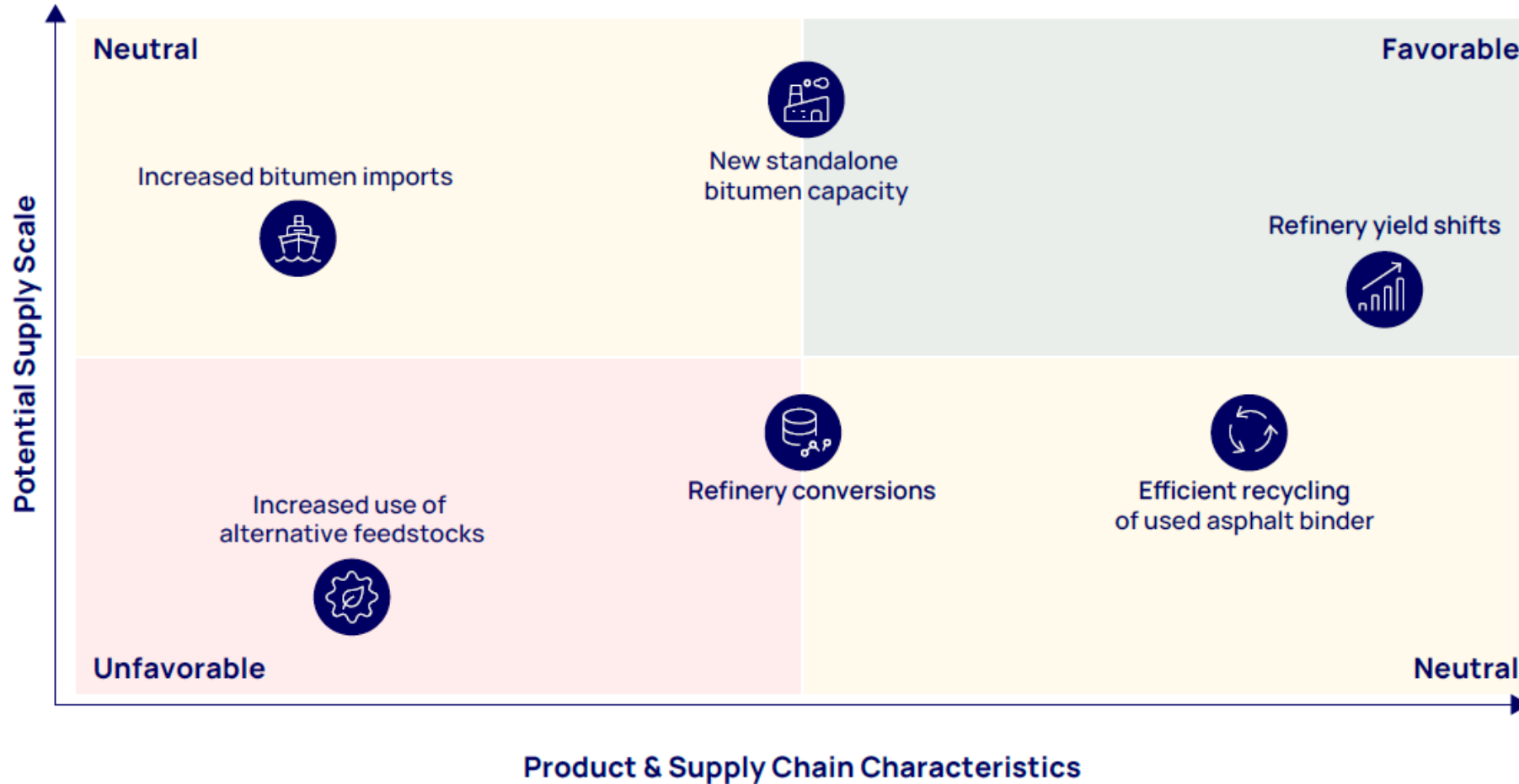
“IMPORTS & THE ASPHALT PAVEMENT INDUSTRY” NAPA

Asphalt Institute Foundation Research: Global Oil Demand for Three Energy Transition Scenarios

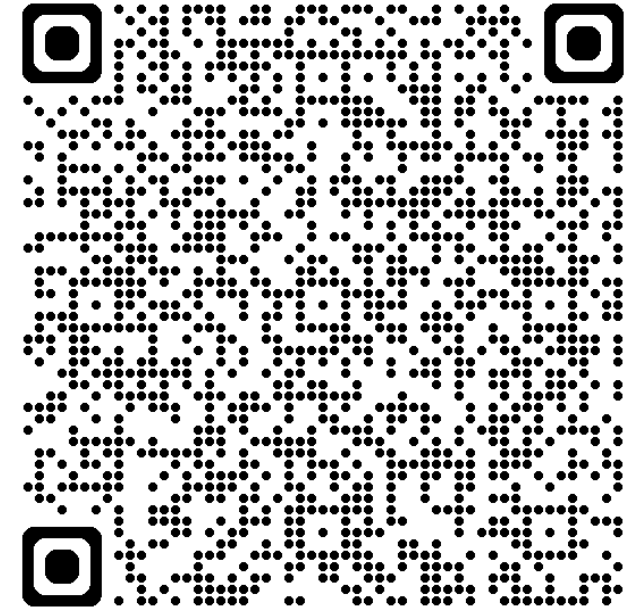


“Analyzing the Petroleum Asphalt Binder Supply Chain under Energy Transition Scenarios”
Wood Mackenzie, 2025.

Addressing a (potential) shortfall:



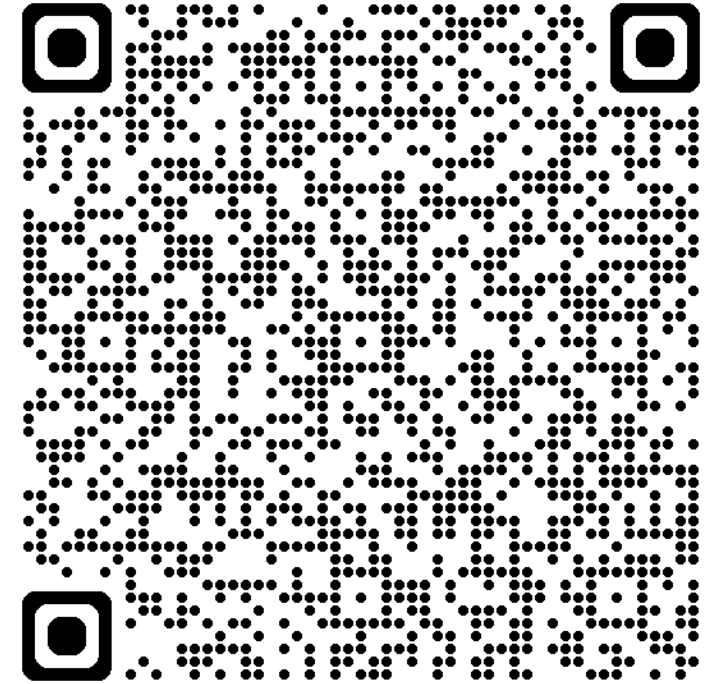
Viability as future supply option: ■ Unfavorable ■ Neutral ■ Favorable



“Analyzing the Petroleum Asphalt Binder Supply Chain under Energy Transition Scenarios”
Wood Mackenzie, 2025.

Taking Inventory...Accuracy Matters

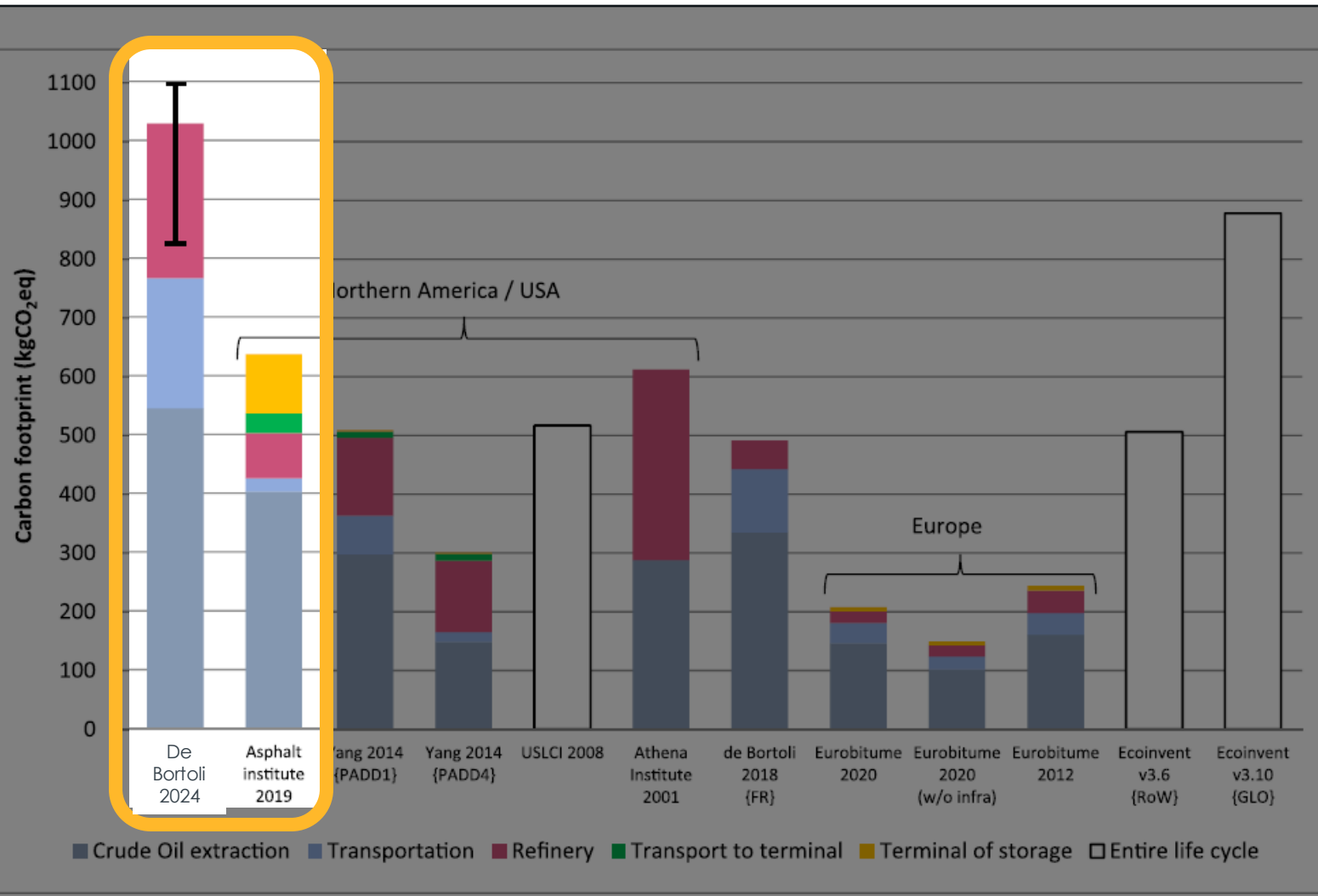
From a raw materials perspective, asphalt binder production is the most significant contributor of upstream GHG emissions in an asphalt mixture, comprising 94% of the emissions associated with raw materials (A1) and 53% of cradle-to-gate emissions (A1-A3) (Shacat et al., 2022).



“GHG Emissions Inventory for Asphalt Mix Production in the United States” NAPA SIP-106, 2022.

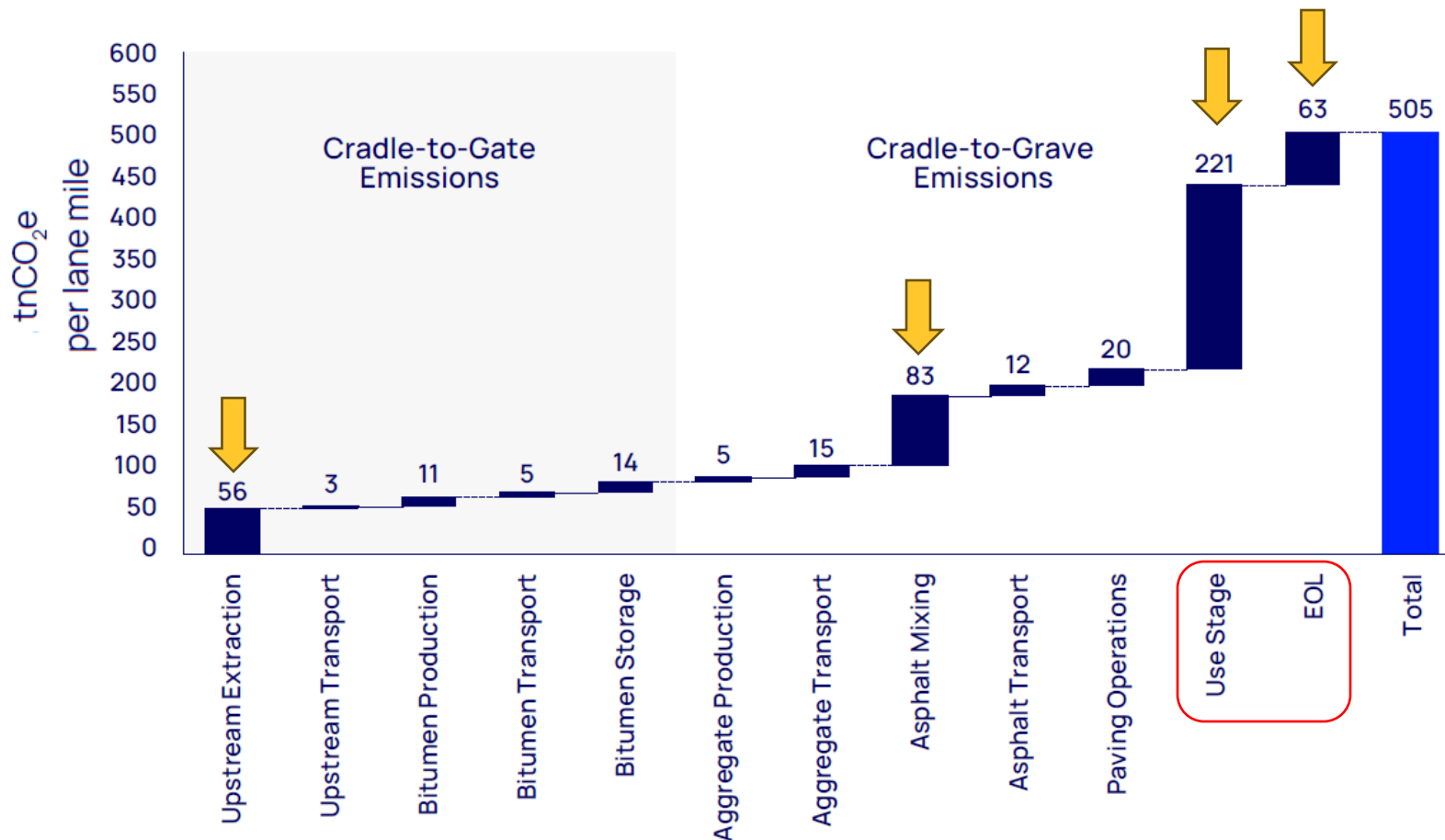
Taking Inventory: A Binder EPD Tool

- End of 2025, systematic rollout
- What to expect (or what *not* to expect)



de Bortoli, A. Et al. "Environmental Life Cycle Impacts of Bitumen: Systematic Review and New Canadian Models; 2024.

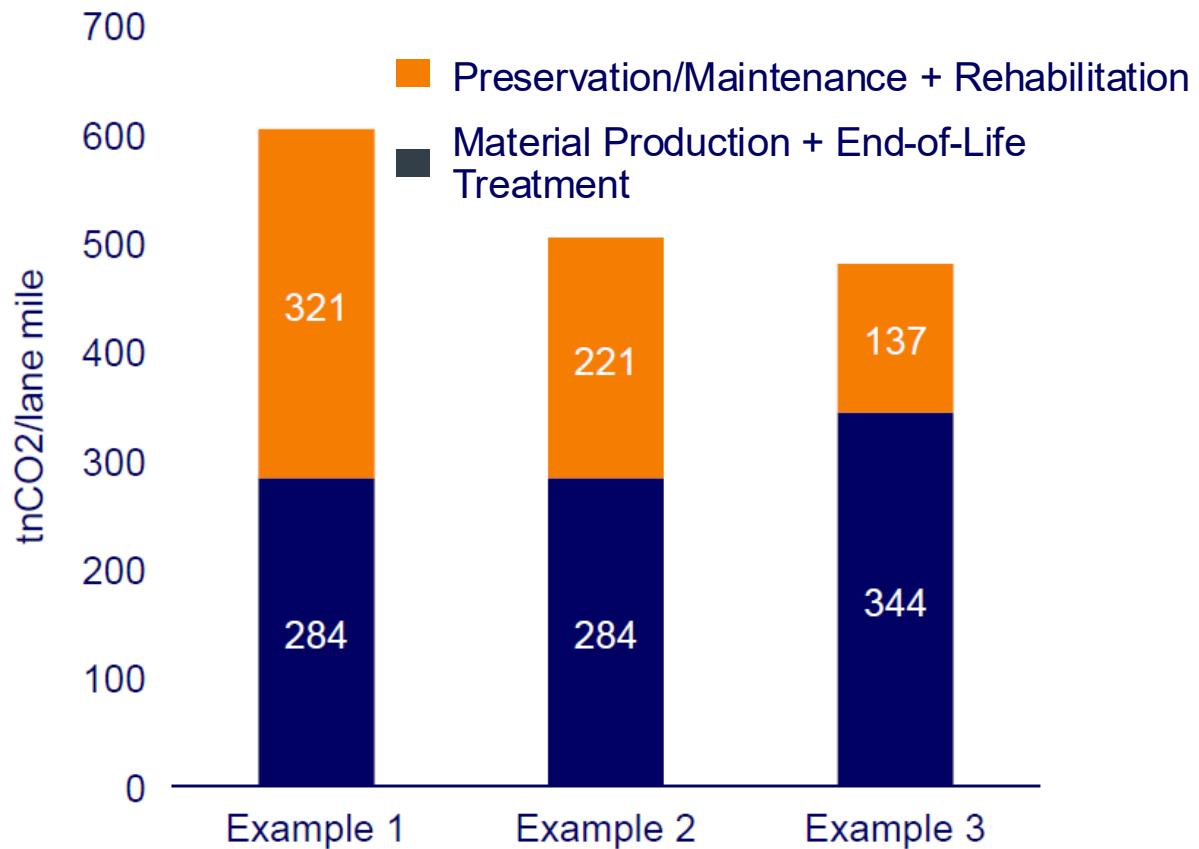
Are we (asphalt industry) ready to prioritize sustainability?



- Where should we focus efforts?
- EPDs (currently) are **Cradle-to-Gate**
- The “Use Stage” and EOL is a strategic competitive advantage of asphalt pavements.

The Case for Innovation Right Now

- We need to make roads last longer.



Parameters used in cradle-to-grave emissions examples

The 3 examples show the emissions impact of changing a single variable in the asphalt mixture or use phase treatment

Example 1 – RAP mixture with no preservation treatments								
Mixture	RAP 22%	Year 0	Year 9	Year 18	Year 27	Year 36	Year 45	Year 50
Initial lay	Reconstruction, 9"	█						
Use Stage	Mill & Fill, 2.5"		█	█	█	█	█	
End-of-life	FDR, 9"							█

Example 2 – RAP mixture with preservation treatments									
Mixture	RAP 22%	Year 0	Year 5	Year 15	Year 20	Year 30	Year 35	Year 45	Year 50
Initial lay	Reconstruction, 9"	█							
Use Stage	Slurry seal Mill & Fill, 2.5"		█		█		█		
End-of-life	FDR, 9"								█

Example 3 – SBS mixture with preservation treatments								
Mixture	SBS 3.5	Year 0	Year 7	Year 20	Year 27	Year 40	Year 47	Year 50
Initial lay	Reconstruction, 9"	█						
Use Stage	Slurry seal Mill & Fill, 2.5"		█		█		█	
End-of-life	FDR, 9"							█

Highly modified asphalt debuts in Michigan on I-96 highway project



Field trials have found HiMA to show better resistance to cracking and rutting -- two forms of road degradation. The primary benefits are an extended pavement life and reduced long-term maintenance costs.

The material is also particularly useful for routes that sustain extremely heavy loads and high volumes of truck traffic, and can be put down in one layer versus the typical multi-layer builds.

However, the material is more expensive than traditional asphalt. It also presents logistical challenges due to a shorter window for installation after blending, making careful planning essential and delays more problematic.

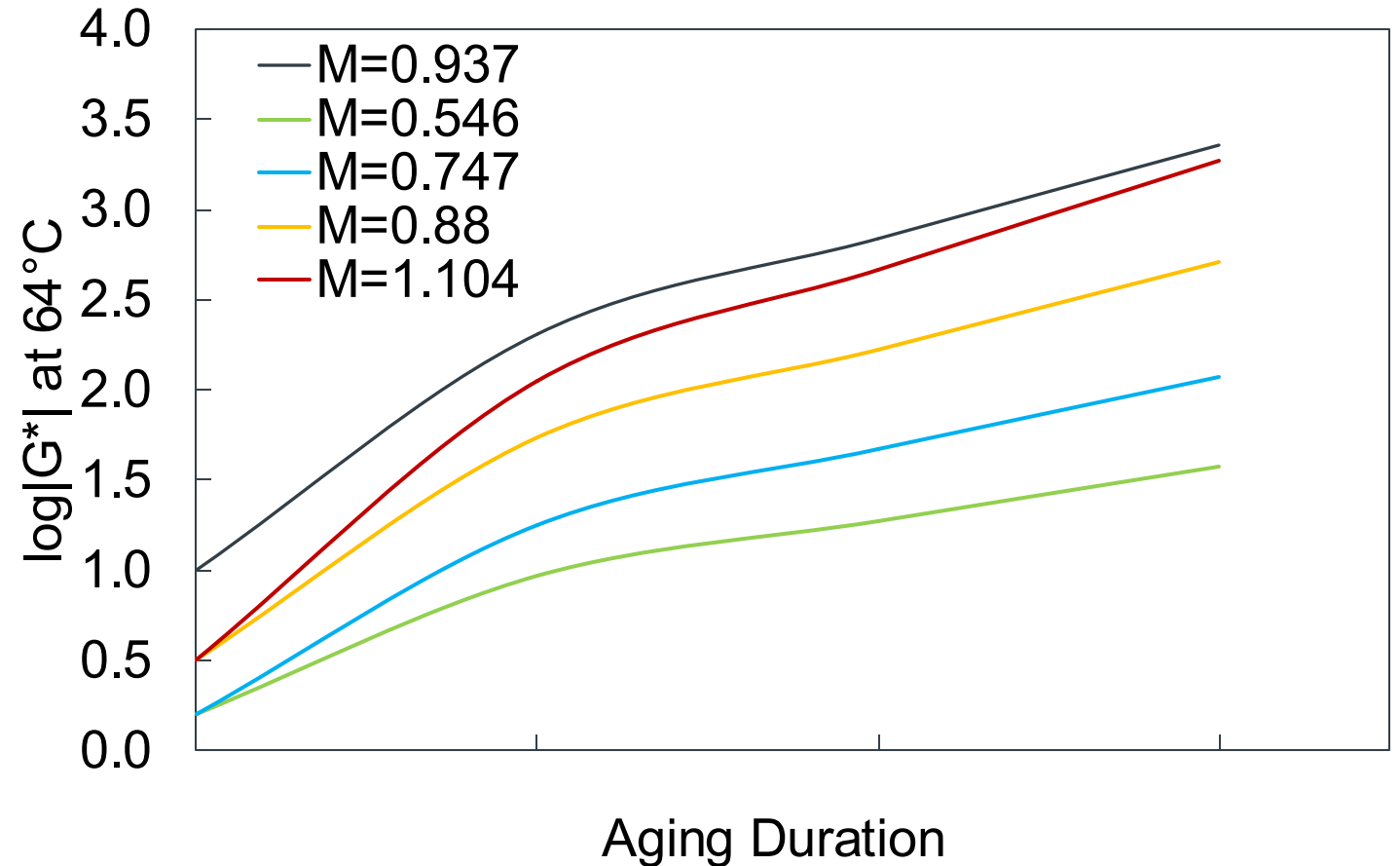
The Social Pillar

- How does the public interface with our product?



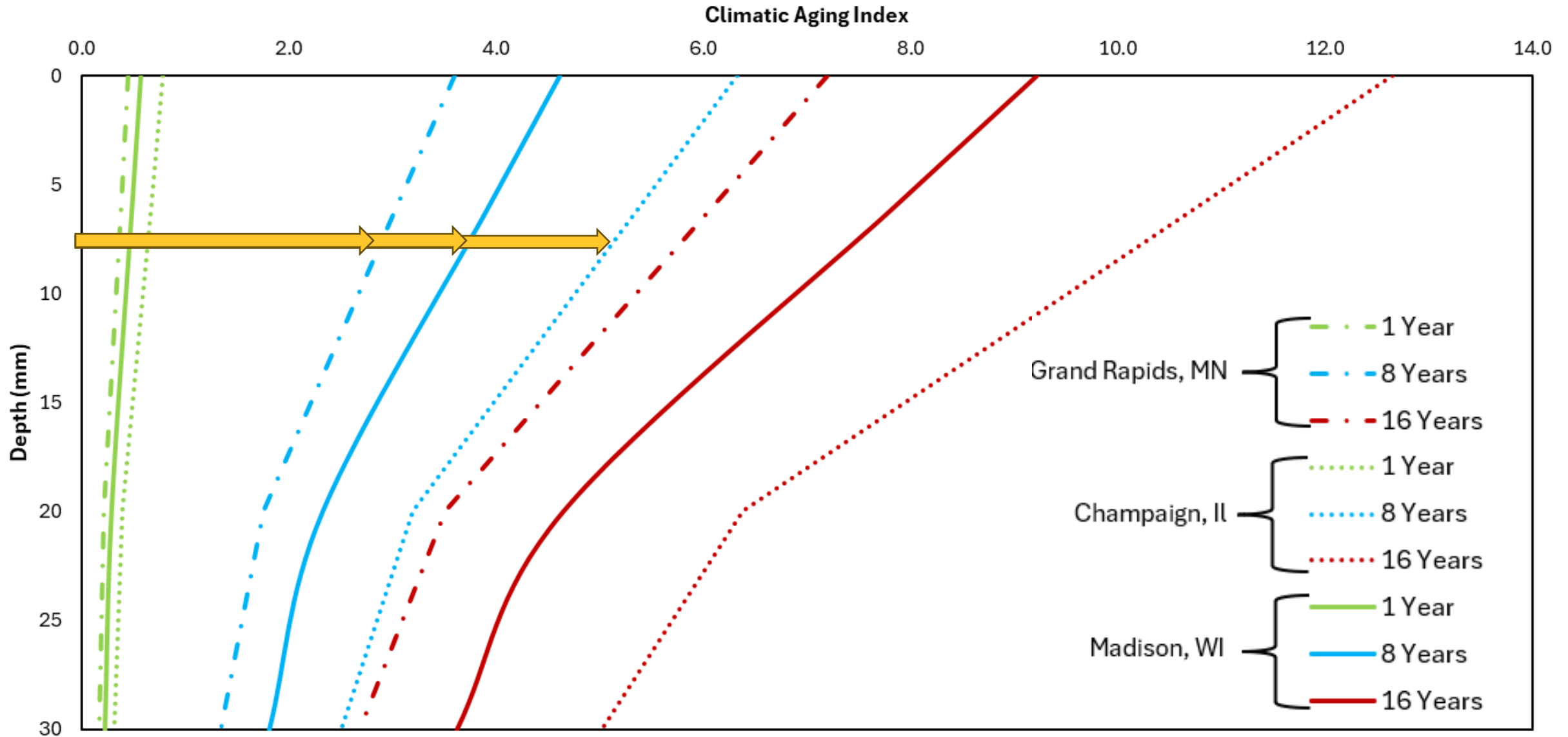
Engineering the Future of Asphalt

(Many) modern* asphalt mixtures exhibit similar aging kinetics – high initial rate, lower rate “reaction period”

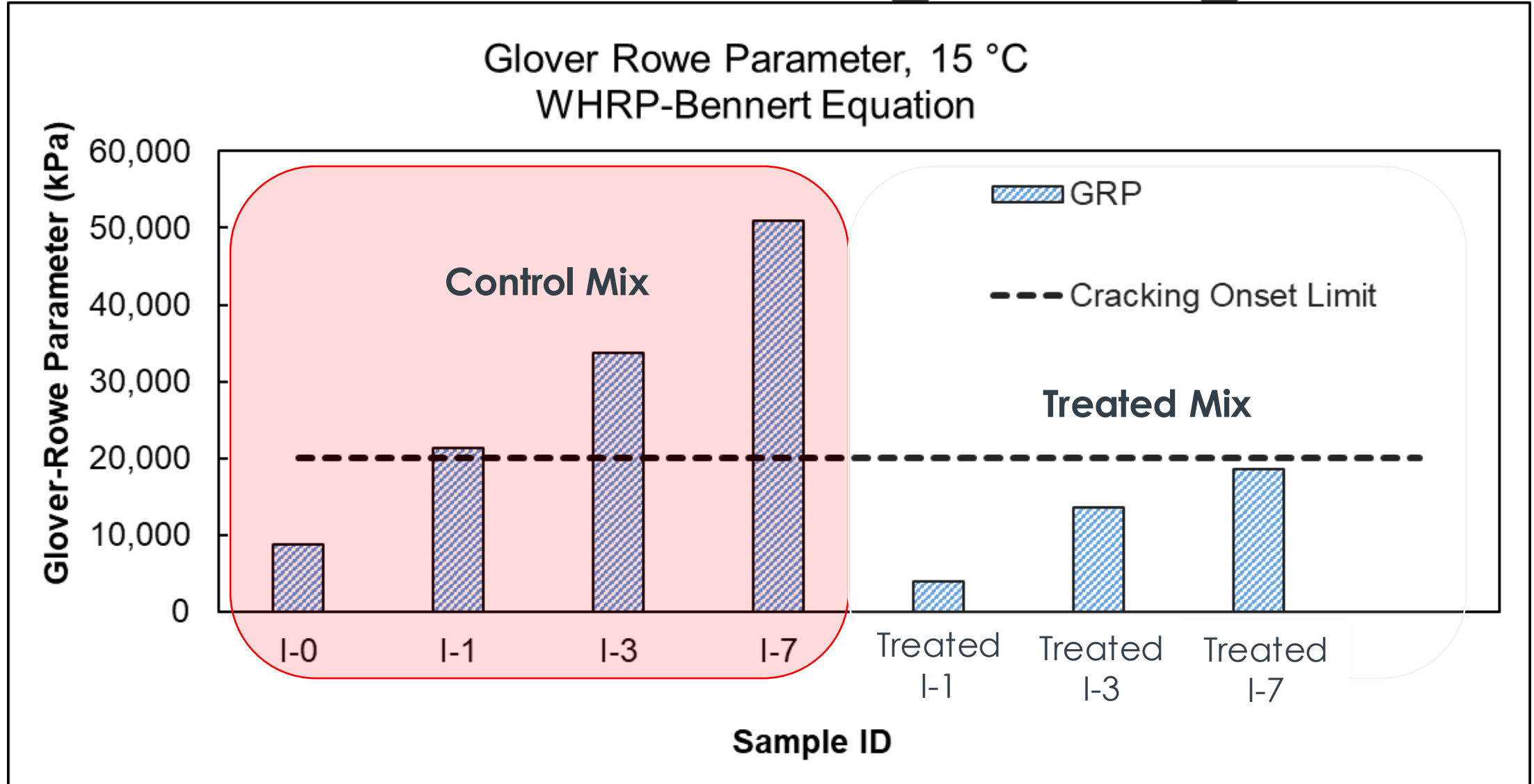


*Data and source materials from NCHRP 09-54 “Long-Term Aging of Asphalt Mixtures for Performance Testing and Prediction”, 2021.

What's Your Rheological Age?



What's Your Rheological Age?



Key Ideas and Opportunities

“Carbon-Accounting” purchasing practices: direction is inevitable

- Asphalt binder will continue to offer key advantages to road building
- Accurate life-cycle accounting for high performance materials is missing
 - Making roads last longer is a non-negotiable. It is the future.
- “Green” products, when prioritized, need to be ready for showtime
 - “There is a lack of consumer demand for low-carbon products, and customers are unwilling to pay a premium for them.”
- Focus on what can be controlled and measured
 - Performance materials and processes must be leveraged
 - Balanced Mix Design needs a rapid path to implementation, then iteration

Thank You!



HERITAGE

CONSTRUCTION + MATERIALS



Scan to connect!