

The Road Forward

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

THE CASE FOR NET ZERO EMISSIONS

In November 2020, NAPA's member leaders authorized the creation of a task force to formulate the asphalt industry's goals and action plan related to carbon emissions. They understand a concerted industry-wide effort is necessary to address the issue one that is certain to have profound environmental, human, and business implications in the coming years. By accepting this challenge, we choose to work toward solving tomorrow's problems today.

NAPA guidance will help the asphalt industry proactively reduce carbon emissions to ensure long-term viability and prosperity.

THE REALITY OF CLIMATE CHANGE

Human activities (chiefly, carbon emissions from the combustion of fossil fuels) are warming the planet. The leading global authority on this issue, the Intergovernmental Panel on Climate Change (IPCC), concluded, "It is unequivocal that human influence has warmed the atmosphere, ocean, and land." Further, the IPCC said this warming is unprecedented, already affects the weather, and will worsen without substantial action. Arresting this trend requires reaching net zero carbon emissions.



FOUR INDUSTRY GOALS BLAZE THE PATH TOWARD NET ZERO

NAPA encourages the industry and its stakeholders to achieve four shared goals to reduce carbon emissions. To be successful, members must actively contribute to these efforts.

NAPA member leaders are positioning carbon emissions reduction as a key driver in partner, stakeholder, and owner actions. The task force has already created an industry-wide position that conforms to the basic Paris Agreement ideas. NAPA will, over the coming months and years, provide guidance to members on reducing carbon emissions in their own companies.

Our industry's goals and related tactics represent a carefully thought-out starting point. Together, our dedicated workforce will leverage our core values of safely providing resilient, sustainable pavements to engineer and implement solutions to reach net zero carbon emissions — spurring change, providing business opportunities, and showcasing asphalt pavements as the premier choice for the environment and our communities.

LIKE IMPROVED SAFETY, REDUCING CARBON EMISSIONS IS POSSIBLE

These are ambitious goals requiring commitment, change, decades of effort, and cooperation. While the challenge may seem daunting, our ambition is not unprecedented. Consider the change in state-of-practice for safety achieved within the last 25 years. Today, safety is the first consideration in everything we do. It is, as it should be, natural to put the safety of our people first. Advancing The Road Forward toward net zero carbon emissions will put climate on similar footing with positive results for everyone.

THE ASPHALT INDUSTRY'S ROLE IN REDUCING CARBON EMISSIONS

There is now a critical mass of people who want to address carbon emissions. Governments, industries, companies, and individuals are actively making rules, investments, business decisions, and personal choices to reduce carbon emissions - all of which can impact the asphalt industry. For example:

- the future.

In short, human forces, the free market, and governments are aligning to reduce carbon emissions by injecting policies and practices into business models. NAPA leaders believe that, over the next several decades, reducing carbon emissions will be the industry's foremost goal, persisting even amid changing political or economic situations.



• 12 states have active carbon pricing programs. • As of 2021, the American Petroleum Institute supports national carbon pricing.

• Blackrock, the world's largest asset manager, believes, "Climate change is real and cannot be ignored by investors."

• The next generation of workers (Millennials and Gen Z) talk, care, and do more about the environment than previous generations; they want to work for companies that are taking action. • Funding, support, and incentives for carbon reduction efforts are available now and into

> This document describes the situation, why *it concerns the* asphalt industry now, and how the industry is taking action.

ACKNOWLEDGEMENTS

We gratefully acknowledge the eagerness and dedication of the Climate Stewardship Task Force, charged with developing objectives for the industry related to sustainability and resilience, along with a communications strategy and a research and implementation roadmap to advance the industry toward those objectives. Thank you.

TASK FORCE LEADERSHIP

Chair: Ron Sines. CRH Americas Materials Inc. Vice-Chair: **Dan Gallagher**, Gallagher Asphalt Corp. NAPA Staff: Richard Willis & Joseph Shacat

PRODUCERS

Chris Abadie, Pine Bluff Sand & Gravel Co. Raven Adams, Granite Construction Inc. Andy DeCraene, Ajax Paving of Florida LLC **Dan Ganoe**, Lindy Paving Inc. Allen Hendricks. Eurovia USA Gerald Huber, The Heritage Group Jav Lemon. Haskell Lemon Construction Co. Jamie Moretz, CWR Contracting Inc., a Construction Partners Inc. Co. Craig Parker. Silver Star Construction Co. Inc. Robert Ponton, Colas Inc. Susan Witt. Gerken Materials Inc.

ASSOCIATE MEMBER COUNCIL

Britt Blacklidge, Blacklidge

STATE ASPHALT PAVEMENT ASSOCIATIONS

Bruce Barkevich. New York Construction Materials Association John Hickey, Asphalt Pavement Association of Oregon

ACADEMIA

Ben Bowers, Auburn University Adam Hand, University of Nevada at Reno Steve Muench, University of Washington



ASPHALT PAVEMENT INDUSTRY GOALS FOR CLIMATE STEWARDSHIP: TOWARD NET ZERO CARBON EMISSIONS





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



Sustainable communities and commerce, connected by net zero carbon emission asphalt pavements.

Follow our progress & find resources at AsphaltPavement.org/Forward



Achieve net zero carbon emissions during asphalt production and construction by 2050. Scope 1 Emissions

WHAT IT MEANS

The industry will, on a net basis, not contribute any carbon emissions from its own operations (e.g., materials, equipment). Many countries, industries, and companies worldwide are pledging to reach net zero carbon emissions by 2050 - agoal echoed by the asphalt pavement industry.

TACTICS

- A. Understand key drivers of asphalt production and construction emissions.
- B. Encourage alternative and renewable fuel use at asphalt plants to reduce carbon emissions.
- C. Partner with owners to align policies, procedures, and specifications to promote net zero production and construction.
- D. Promote the use of WMA technology to reduce temperatures and emissions during asphalt mixture production.
- E. Partner with equipment manufacturers to align industry plans and product development to reduce emissions during production and construction.
- F. Advance adoption of advanced logistical technologies for improved trucking efficiency.
- G. Develop an understanding and timeline for switching equipment and fleet to cleaner energy sources.
- H. Identify best practices for reducing energy consumption of equipment during the construction phase.
- I. Explore opportunities to identify and establish new programs to aid in capital investments needed to achieve net zero.

RESEARCH & IMPLEMENTATION GAP

• Research technologies that would allow a 50% reduction in energy and associated emissions required to produce asphalt mixtures.

INDUSTRY GOAL (2)

Partner with customers to reduce emissions through pavement quality, durability, longevity, and efficiency standards by 2050. Downstream Scope 3 Emissions

WHAT IT MEANS

The asphalt industry relies on customers and stakeholders to achieve net zero carbon emissions. Owners must ask for products and implement practices that lead to net zero emissions. NAPA commits to partnering with stakeholders to achieve a sustainable business case for these actions.

TACTICS

- A. Educate owners on alternative construction scheduling to reduce emissions associated with work zone congestions.
- B. Increase pavement life through expanded adoption of perpetual pavement design methodologies, improved construction practices, and pavement preservation.
- C. Educate decision-makers and users on factors that influence rolling resistance.
- D. Work with specifying agencies to develop contract incentives for actions that reduce emissions through improved pavement quality or improved vehicular fuel economy.

RESEARCH & IMPLEMENTATION GAPS



• Complete new research to further define the impact of pavement properties that affect rolling resistance.

WHAT IT MEANS

Supplier partnerships and net zero commitments are critical for the industry to achieve net zero carbon emissions. What the industry asks of and gets from its suppliers counts toward its own net zero goal.

asphalt recycling technologies - cold central plant recycling (CCPR), cold in-place recycling, full-depth reclamation, and hot in-place recycling - as an opportunity to positively impact the carbon footprint of asphalt pavement. other recycled materials in asphalt mixtures.

C. Explore the industry's role in advancing other D. Advocate for the appropriate use of RAP and

RESEARCH & IMPLEMENTATION GAPS

 Research the use of new forms of asphalt binder and/or asphalt binder replacements. • Encourage a culture to allow for the rapid assessment of new materials that could be used in asphalt mixtures through a BMD approach. • Educate producers and owners on the use and acceptance of performance tests used in BMD to allow for the development of specifications that encourage innovation in materials and construction.

• Conduct research that would allow the asphalt pavement industry to increase RAP content to greater than 40%.



Develop a net zero materials supply chain by 2050. Upstream Scope 3 Emissions

TACTICS

A. Advance the use of recycled and innovative sustainable materials in all asphalt pavement mixtures through the use of LCA-based tools coupled with Balanced Mix Design (BMD) and performance metrics.

B. Engage with upstream suppliers to accelerate emission reductions in the material supply chain.

• Quantify upstream impacts of additive production.



Transition to electricity from renewable energy providers in support of net zero carbon electricity generation by 2050 and reduce electrical intensities. Scope 2 Emissions

WHAT IT MEANS

The power generation industry is moving toward net zero carbon, which the asphalt industry can leverage to reduce its own emissions.

TACTICS

- A. Transition to net zero energy where possible.
- B. Increase electricity efficiency in operations.

CARBON OFFSETS

To achieve net zero in the production of asphalt mixtures, carbon offsets will be necessary; however, it is the industry's intention to use carbon offsets only as the last option. Industry will reduce emissions as much as technologically possible and use offsets to achieve net zero. Therefore, the current industry tactics associated with carbon offsets are:

- Explore the use of carbon offsets to reach net zero emissions.
- Explore the potential use of carbon offsets to monetize and incentivize industry practices that reduce GHG emissions.

