WARM-MIX ASPHALT AND RECLAIMED ASPHALT PAVEMENT REDUCE GREENHOUSE GAS EMISSIONS

The United States has established long-term temperature reduction goals by signing the Paris Agreement. The asphalt pavement industry is committed to supporting the government's articulated goals and detailing the two existing technologies, warm-mix asphalt (WMA) and reclaimed asphalt pavements (RAP), which reduce energy consumption and minimize greenhouse gas (GHG) emissions.

OVERVIEW OF ASPHALT PAVEMENT INDUSTRY ANNUAL SURVEY

Two key technologies to assist America in reaching its goal to reduce emissions and energy consumption include WMA, which reduces energy use during production, and RAP, which reduces the need for virgin materials. In league with the Federal

Highway Administration, the National Asphalt Pavement Association annually conducts a survey, gathering data from asphalt mix producers on the

TWO KEY TECHNOLOGIES TO ASSIST AMERICA IN REACHING ITS GOAL TO REDUCE EMISSIONS AND ENERGY CONSUMPTION INCLUDE WMA, WHICH REDUCES ENERGY USE DURING PRODUCTION, AND RAP, WHICH REDUCES THE NEED FOR VIRGIN MATERIALS.

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use of these innovative technologies and quantifying the emission reduction achieved through the industry's wide-spread adoption. "Asphalt Pavement Industry Survey on Recycled Materials and Warm-Mix Asphalt Usage 2019" represents 212 companies owning 1,101 asphalt production facilities located in 48 states, the District of Columbia, and one U.S. territory. Conducted since 2010 the data

THRU TOBEY THIS SIGNAL

showcases the environmental record of the industry.

ENERGY AND GHG EMISSION REDUCTION ESTIMATES FROM PRODUCTION OF WMA AT REDUCED TEMPERATURE

Reductions in energy consumption and GHG emissions associated with the production of WMA are achieved because of the reduced fuel (energy) required to heat the

mixture. Researchers found the average temperature reduction achieved then calculated the expected energy savings from reduced temperature.

These emission factors are used to estimate the combustion related GHG emission reduction from producing WMA at reduced temperature. The conservative and optimistic scenarios assume average reductions in mix production temperature of 10° F and 40° F, respectively. Meaning that in 2019 alone, the use of WMA in the U.S. removed the equivalent annual emissions of between 11,000 to 46,000 passenger vehicles. MOST RECYCLED PRODUCT Over a ten-year period ANNUALLY BY WEIGHT, OVER (2009 - 2019), the cumulative 97 MILLION TONS OF RAP WAS reduction of GHG emissions **RECYCLED IN 2019 SAVING 58.9 MILLION** from use of WMA is estimated CUBIC YARDS OF LANDFILL SPACE, to between .642 and THE EQUIVALENT TO FILLING UP 2.58 million tonne CO₂e, THE U.S. CAPITOL DOME equivalent to the annual

emissions between 14,000 to 56,000 passenger vehicles.

GHG EMISSION REDUCTION ESTIMATES FROM USE OF RAP

America's most recycled product annually by weight, over 97 million tons of RAP was recycled in 2019 saving 58.9 million cubic yards of landfill space, the equivalent to filling up the U.S. Capitol dome 1,223 times. Above recycling, the use of RAP in

asphalt mixtures leads to quantifiable reductions in GHG emissions. Emissions are reduced because the need to ship and manufacture raw materials is minimized.

Net reduction of GHG emissions from use of RAP in new asphalt mixtures in 2019 is estimated to be 2.4 million tonne CO₂e, equivalent to the annual emissions from approximately 520,000 passenger vehicles. The cumulative reduction of GHG emissions from use of RAP in new asphalt mixtures for the period 2009-2019 is estimated to be 21.2 million tonne CO2e. equivalent to the annual emissions from approximately 460,000 passenger vehicles.

PATH FORWARD

As the industry continues to look for new ways to reduce its impact on climate, furthering the use of two well-proven technologies such as RAP and WMA should be prioritized. The impacts of both are welldocumented, and research has proven that industry has not reached it ceiling in their use of producing and constructing high guality, sustainable asphalt pavements.



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