RAP Benefits for Pavement Owners

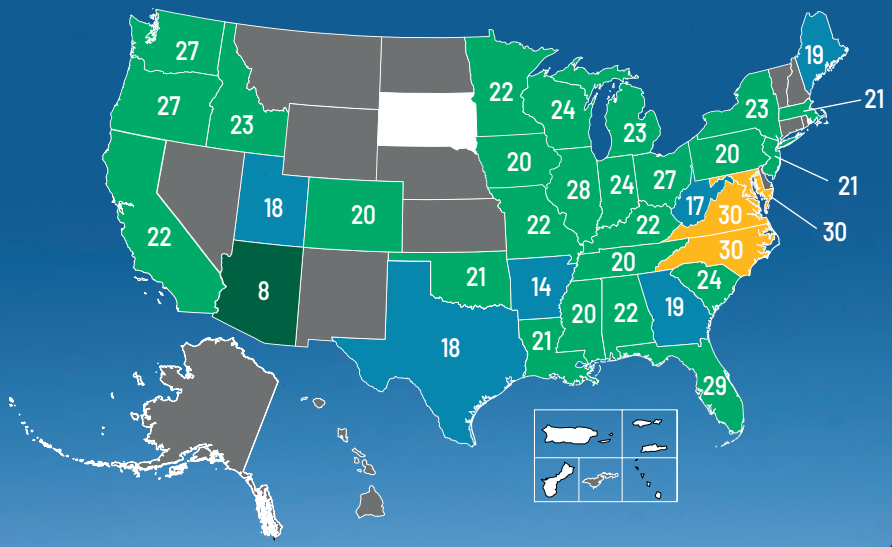
WHAT IS RAP?

Reclaimed asphalt pavement (RAP) is the terminology used for materials generated when asphalt pavements are removed for reconstruction, resurfacing, or other construction activities. RAP consists of high-quality, graded aggregates that are coated with durable asphalt binder.

HOW AND WHERE IS RAP RECYCLED?

96.1 million tons of RAP are used annually in new asphalt pavement construction in the United States. As a fully recyclable product, RAP has many applications, and can be used over and over again, reducing the need for costly virgin materials. Approximately 89% of RAP is reused in new asphalt mixtures and about 11% is used in other civil engineering applications such as unbound aggregate bases. Nationally, RAP is utilized at an average rate of **21.9%** in new asphalt mixtures.

AVERAGE PERCENTAGE OF RAP USED IN EACH STATE, 2023 (NAPA IS-138, 2025)



AVERAGE RAP %

- <3 Co. Reporting
- 0–9
- 10–19
- 20–29
- ≥30
- No Cos. Reporting

Photo by Caterpillar

Benefits of recycling asphalt pavements

SUSTAINABILITY

The net reduction of greenhouse gas emissions from the use of RAP in new asphalt mixtures from 2009 to 2023 was estimated at **31.7 million tonne** CO_2e, equivalent to the annual emissions from approximately **460,000 passenger vehicles**. In 2023, more than **108 million tons** of RAP were recycled into new asphalt pavements and other civil engineering applications, saving **65.5 million cubic yards** of landfill space.

COST SAVINGS

$4.3 billion are saved every year by using RAP – making asphalt pavement both environmentally and economically sustainable. Nationally, the average **21.9%** RAP used in new asphalt mixtures saves **$9.98 per ton**, compared to mixtures using all virgin materials.

ASPHALT PAVEMENTS CAN HELP PROJECT OWNERS EARN CREDITS UNDER THE LEED RATING SYSTEM.

PERFORMANCE

ON AVERAGE, USING RAP INSTEAD OF NEW MATERIALS SAVES $9.98 PER TON.

Asphalt mixtures containing high levels of RAP have been in place and performing for many decades. Researchers have conducted laboratory and field evaluations on mixtures containing high levels of RAP and have indicated that the structural performance of recycled mixes is equal and, in some instances, better than that of the conventional mixes1. Additionally, several studies have found that RAP stockpiles had less variability than virgin aggregate stockpiles and that using higher percentages of RAP did not lead to increased variability of the asphalt mixtures produced2,3,4. The completed research has also generated several best management practices to assist producers in supplying high-quality asphalt mixtures containing RAP.

STUDIES SHOW THAT OVERLAYS WITH ENGINEERED MIXES CONTAINING 30% RAP PERFORM JUST AS WELL AS VIRGIN ASPHALT MIXES[5].

NAPA
NATIONAL ASPHALT PAVEMENT ASSOCIATION

Do your part to recycle and reap the benefits at the same time!
Click or scan to learn more about the benefits of recycling asphalt pavements.

[1] Kandhal, P., et al. Performance of Recycled Hot Mix Asphalt Mixtures, NCAT Report 95-01. National Center for Asphalt Technology, May 1995.

[2] Estakhri, C., et al., Recycled Hot-Mix Asphalt Concrete in Florida: A Variability Study, ICAR-401-/98. International Center for Aggregate Research, 1998.

[3] National Cooperative Highway Research Program. Improved Mix Design, Evaluation, and Materials Management Practices for Hot Mix Asphalt with High Reclaimed Asphalt Pavement Content. NCHRP Report 752. The National Academies of Sciences, Engineering, and Medicine, 2013.

[4] Nady, R. The Quality of Random RAP, Separating Fact from Supposition. Hot Mix Asphalt Technology, Vol. 2, No. 2. National Asphalt Pavement Association, 1997.

[5] West, R., et al. Use of Data from Specific Pavement Studies Experiment 5 in the Long-Term Pavement Performance Program to Compare Virgin and Recycled Asphalt Pavements. Transportation Research Record: Journal of the Transportation Research Board, January 2011.