



Recycling and Paving with Asphalt Shingles

New Specifications and Other
Developments in Seattle and King County



King County

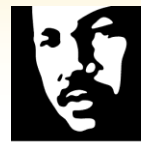
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Linkup

- Support development of
 - collection/processing infrastructure for recycling
 - end markets for recyclable & reusable materials/products
- 2014 focus materials
 - Mattresses, textiles, compost, carpet, & asphalt shingles



Who is here?

- Paving contractors, asphalt suppliers, and other industry reps
- Pavement engineers and other transportation department reps
- State or local government agency reps that manage capital and/or maintenance projects.
- Recycling businesses and others involved in shingles recycling
- Other state or local government agency representatives

Why Recycled Asphalt Shingles and Why Now?

Using recycled asphalt shingles (RAS) in asphalt pavements:

- is **cost competitive**, with the potential for long-term savings
- is possible in a wide range of applications
- diverts a **valuable resource** from landfills
- advances **sustainability** goals
- has been studied for 10+ years—
21 states use RAS as standard practice



Washington State DOT Use of RAS Has Begun

- WSDOT General Special Provision (adopted in 2012) - allows RAS in state paving contracts using WSDOT approved mix designs.
- One project paved with RAS to-date:
 - State highway in Edgewood, WA using 20,000 tons HMA with 1.5% RAS

SE 416th Street Overlay: Shingles in Paving Demonstration Project

- Up until 2009, no public agencies in Washington State had used pavements containing RAS
- King County Road Services Division conducted a controlled experimental paving demonstration in Enumclaw



Research Findings Show RAS Pavements Perform

- KC Demonstration Project Findings:

Three years of extensive material engineering tests and monitoring show that RAS had no impact, favorable or detrimental, on road performance.

- FHWA Transportation Pooled Fund Study Findings:

Pavements using RAS alone or in combination with other cost saving technologies—such a recycled asphalt pavement (RAP) and warm mix asphalt (WMA)—can be successfully produced and meet state agency quality assurance requirements.

Nascent to Norm

Research and demonstration projects helped to transition RAS from **experimental product** to part of **standard specifications** in many states.



Focus of future research::

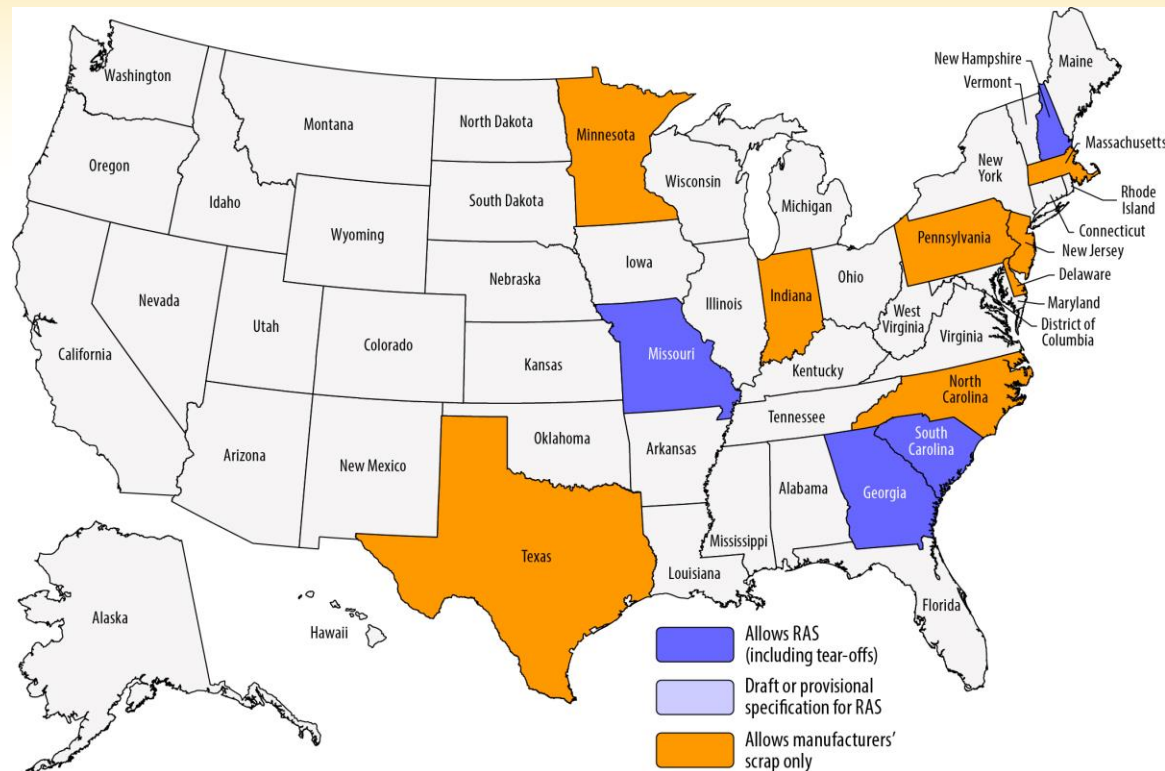
- **fine-tuning** of mix designs,
- use of RAS in applications such as warm mix, porous pavements, etc.

Shingles in Paving Success

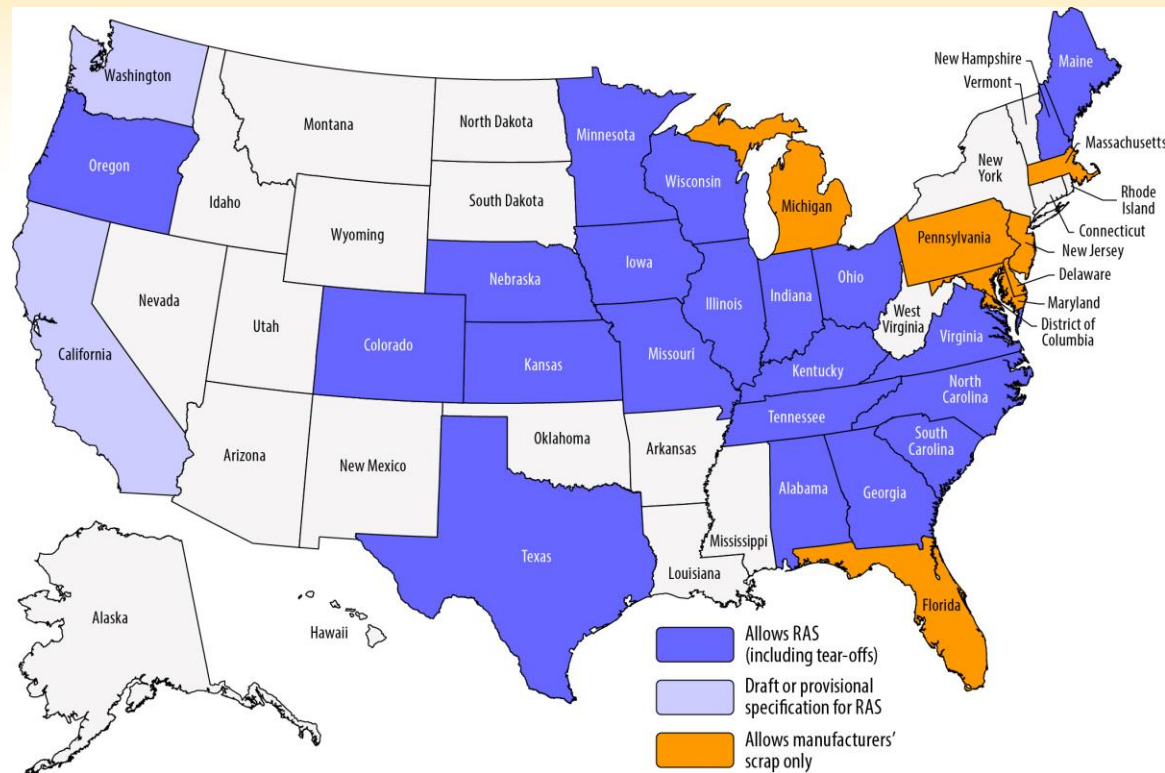
Since the LinkUp Shingles in Paving project launch in 2007, acceptance and use of RAS in paving has **grown tremendously**.



From 4 state DOT's with standard specifications for post-consumer RAS in HMA in 2007...



To 21 state DOT's with standard specifications for post-consumer RAS in HMA today.



Tremendous Increase in Use

National Annual Pavement Industry Survey documents tremendous recent increase in RAS use.

- Between 2009 and 2012, RAS use more than **doubled** nationwide
- Use of **1.86 million tons** of RAS in 2012 equates to **2.1 million barrels** of asphalt binder conserved and **\$228 million** in cost savings



Local Agency Adoption

Since the demonstration project, several other **local agencies** have also completed projects using RAS, including:

- City of Bellevue
- King County Parks Division
- Metro Transit



KC Solid Waste Division Commitment

King County Solid Waste Division is committed to using RAS in capital and maintenance projects:

- **Bow Lake Recycling & Transfer Station** – completed (2012)
- **Factoria Recycling & Transfer Station** – scheduled for construction (2014)
- **Facilities work order contract**
 - ongoing
 - RAS required since 2011



Bow Lake Transfer Station Paving Details

- LEED™ Platinum certification.
- Project included 9,500 tons of HMA containing 3% RAS.
- Recycled approximately 450 tons of asphalt shingles, diverting tear-off shingles from approximately 150 roofs.
- Pavement handles heavy loads and equipment on a daily basis.



Today's Presentations

- **King County Road Services Division** - initial research and its new special provision for the use of RAS in hot mix asphalt
- **Seattle Public Utilities** - construction and demolition recycling requirements and upcoming ban on the disposal of asphalt shingles
- **Washington State Department of Ecology** - an overview on regulations for recycling asphaltic roofing and guidance on compliance

The RAS Opportunity

- Local governments can begin using King County's Road Services Division special provision.
- Expanded use of WSDOT general special provision
- Recyclers and hot mix asphalt producers
 - work together to expand collection, processing and use
 - use the information provided today and access assistance compliance with state solid waste handling regulations
- Private projects can request use of RAS.

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See “asphalt shingles” at www.kingcounty.gov/linkup.



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