Live Webinar Series

THE ROAD TO 100% TIRE CIRCULARITY: ELTS GOING FULL CIRCLE

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Webinar Recap

Strategies for RMA Adoption in Southern States: Cost-Saving High-Performance Infrastructure Solutions

February 11, 2026

Host:

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Panelists:

- Dr. Kimberly Lyons, Asphalt Materials Engineer, South Carolina Department of Transportation
- Allie Kelly, Executive Director, The Ray
- Alexei Ondrick, Senior Director of Business Development, Liberty Tire Recycling
- James Lively, Vice President of Sales and Marketing, Asphalt Plus

Key Takeaways

The Southeast faces distinct infrastructure challenges: high heat, heavy freight corridors, and growing metropolitan areas requiring durable pavements. Rubber-modified asphalt (RMA) addresses these conditions through superior rutting resistance in hot climates, cost-effectiveness compared to polymer alternatives, and contractor-friendly dry process technology that eliminates the complexity of wet process systems. Success across the region demonstrates powerful momentum through cross-state collaboration:

- South Carolina's collaborative specification development, building on Georgia's experience.
- Georgia's two decades of performance-based leadership.
- Atlanta DOT and The Ray's innovation in urban heat island mitigation, launching first projects in November 2025. See The Ray and UGA UHI Research Project for details.

These examples show that RMA adoption requires cooperation among state DOTs willing to adapt proven specifications from neighbors, contractors embracing accessible dry process technology, and researchers documenting performance benefits including emerging applications like urban heat island mitigation.

Southern-Specific Benefits

Superior Heat Performance and Rutting Resistance

- RMA excels in hot weather conditions that plague southern interstates and heavy freight corridors. The crumb rubber grains absorb lighter ends of the asphalt, improving stiffness and rutting characteristics under high pavement temperatures and heavy loads. Each pound of minus-30 mesh material contains approximately 5 million individual rubber grains that function as crack-pinning agents. When cracks encounter these rubber particles, they must work around irregular surfaces rather than propagating straight through.

- Laboratory testing and field performance confirm RMA significantly outperforms traditional hot mix asphalt in both rutting and cracking resistance. The National Center for Asphalt Technology (NCAT) test sections show dry process engineered crumb rubber (ECR) outperformed polymer-modified asphalt, with the polymer section cracking after 5 million equivalent single axle loads (ESALs) while rubber sections showed cracking only after 8 million ESALs. NCAT extended rubber testing beyond 10 million to 13 million ESALs based on this superior performance.

Dry Process Advantages and Cost-Effectiveness

- The dry process represents a transformative shift from historical wet process limitations. Wet process required multiple tanks with agitators, heating equipment, and created operational challenges including plugged filters and pipes with limited application windows. If material in a 72-hour tank wasn't used, contractors paid for material they had to dispose of. Dry process eliminates these inefficiencies through simple on-off operation. Taking a base of a PG64 asphalt, adding 5% rubber produces PG70 comparable performance, while adding 10% rubber produces PG76 performance.

- This efficiency extends to cost: dry process RMA saves $2-4 per mixed ton compared to polymer-modified asphalt while delivering equivalent or superior performance. With approximately 9-10 million mixed tons of dry process rubber successfully laid, the industry has substantial evidence of operational success.

Private Sector Adoption and Commercial Applications

- Commercial property owners increasingly choose RMA for longer-lasting pavements worth the additive investment. When customers see one-third of a big box store parking lot closed for paving and another third for milling, they reconsider their shopping trip or drive to competitors, making maintenance timing critical for sales. Major retailers including Lowe's, Walmart, and Discount Tire have deployed RMA in their facilities.

- The shift toward heavier electric vehicles, particularly electric transit buses with significant dwell time during passenger pickup and drop-off, creates accelerated wear in metropolitan areas. Major metro areas across the Southeast now seek RMA's performance benefits to address this emerging challenge as mobility becomes more electric and potentially more damaging to roadways.

Regional Success Stories

South Carolina: Collaborative Specification Development

- South Carolina's 30-plus year RMA journey began in 1991 following the Intermodal Surface Transportation Efficiency Act, partnering with Clemson University and Dr. Sergi Amirkhanian to evaluate implementation requirements.

- The state initially explored dry process as aggregate replacement in the 1990s but found that approach unsuitable. Wet process performed well but added costs and equipment requirements made it less desirable.

- When revisiting dry process technology, South Carolina looked to Georgia's successful experience rather than reinventing solutions, using Georgia's research and specifications as foundation.

- South Carolina DOT coordinated with rubber suppliers and willing contractors to develop not only dry process specifications but also pushed boundaries by incorporating rubber into stone matrix asphalt as a durability additive replacing fibers.

- The state conducted rigorous testing through Asphalt Pavement Analyzer (APA), Hamburg Wheel-Tracking Test), Illinois Flexibility Index Test – Cracking Tolerance (IDEAL-CT), and life cycle analysis, then fast-tracked validation through a NCAT test section using current specifications without modifications since active projects were underway.

- South Carolina now permits wet process, dry process, rubberized SMA, and rubberized chip seal applications. Success required coordination from beginning to end among contractors, suppliers, and the agency, all sitting down together to hear concerns and frustrations from all parties.

Georgia: Two Decades of Performance-Based Leadership

- Georgia has operated arguably the most successful state RMA program in the country for approximately 20 years.

- The state maintains long-standing specifications for RMA in various mixes including stone matrix asphalt and open-graded friction course to address splash and spray on the highway system.

- Georgia's breakthrough came from willingness to step outside standard testing guardrails. When rubberized asphalt couldn't pass the Multiple Stress Creep Recovery (MSCR) test required for polymer-modified binders, Georgia didn't let that stop adoption.

- Instead, the state placed material on roadways, observed performance, cored sections, and tested results. Based on demonstrated durability, Georgia waived the MSCR test requirement for RMA.

- This intelligent decision removed testing shackles and enabled decades of success benefiting taxpayers, contractors, and the DOT.

- Georgia's specifications now serve as templates for neighboring states, with South Carolina and others building on this foundation.

- The state also supports local governments through tire grant programs funded by tire fee income, recycling those funds into financial assistance for first RMA projects in both rural and urban areas.

Atlanta DOT and The Ray: Innovation in Urban Heat Island Mitigation

- Atlanta DOT produced its first rubber-modified asphalt project in November 2025 while preparing roadway networks for the FIFA World Cup.

- Rather than a single pilot, The Ray worked with Atlanta DOT to develop a strategy identifying multiple projects with the goal of establishing permanent specifications prioritizing RMA for most future resurfacing in the Atlanta area.

- The Ray, a nonprofit living laboratory on 18 miles of I-85 in Georgia, has partnered with Georgia DOT over 10 years on more than a dozen innovative projects, with RMA produced in 2019 demonstrating the proving ground concept.

- Now partnering across 25 state DOTs and approximately six tollways, The Ray brings proven methodologies to new jurisdictions.

- Atlanta's projects are now uniquely study RMA's impact on Urban Heat Island (UHI) effect, which Atlanta suffers greatly from during prolonged summers.

- The Ray's GIS team worked with Atlanta DOT to develop spatial analysis methodology accounting for population, vegetative cover, and socioeconomic vulnerability index, identifying communities most vulnerable to UHI based on age, economic access to air conditioning, and other public health factors.

- This research, led by the nation's foremost UHI expert Dr. Marshall Shepherd at University of Georgia, continues into 2026 with support from Georgia's tire grant program and Atlanta DOT's Local Maintenance and Improvement Grant funding.

Calls to Action: What's Next?

Policy Makers

- Develop tire fee programs that recycle revenue into market development grants for local governments, following Georgia and South Carolina models
- Support legislation that shores up state waste tire funds for county cleanup while allocating portions toward incentivizing new end markets like RMA, as demonstrated by North Carolina SB706 and South Carolina S171
- Avoid mandates that upset market landscapes; instead focus on circular economy frameworks and market-based solutions that allow best product for best price
- Position RMA as both infrastructure performance solution and economic development opportunity supporting domestic tire recycling supply chains

DOTs and Municipal Leaders

- Trust engineering data and experience from neighboring states rather than reinventing specifications. For example, South Carolina built on Georgia's foundation, other states can build on both
- Coordinate with contractors, suppliers, and state agencies from the beginning to end, sitting down together to hear concerns and frustrations from all parties
- Consider waiving testing requirements that don't reflect field performance, following Georgia's precedent of removing MSCR test barriers when roadway observations demonstrated RMA durability
- Develop multiple first projects rather than single pilots to build toward permanent specifications, as Atlanta DOT approached RMA adoption
- Explore innovative applications including urban heat island mitigation, particularly for metropolitan areas facing accelerated wear from electric vehicle fleets

Contractors and Asphalt Producers

- Recognize that any contractor with a plant has means and ability to produce dry process RMA using commonly available equipment
- Understand dry process as simple on-off operation without wet process complexity of pre-digesting rubber, maintaining heated tanks, or disposal of unused material
- Support DOT specification development by participating in coordination from beginning to end, sharing operational concerns openly
- Invest in blower equipment or utilize existing fiber machines, spare RAP bins, or lime silos tied to plant control towers for automated quality documentation
- Leverage multi-state locations to support adoption in new markets, sharing hands-on experience with sister operations

Civil Engineers and Researchers

- Document emerging research gaps including recyclability of RMA pavements. California has two decades of evidence showing rubber-modified RAP successfully reused, but updated case studies are needed
- Conduct performance testing including APA, Hamburg, Ideal-CT, and life cycle analysis to validate RMA benefits for local materials and conditions
- Reference the upcoming updated USTMA State of Knowledge report for guidance on quality control procedures and specification development

Recyclers

- Engage beyond material supply to educate commercial end users, DOT end users, contractors, and plants until all parties become comfortable and can serve as force multipliers
- Work with state asphalt pavement associations like Southeastern Asphalt User/Producer Group (SEAGUP) to navigate local producers and DOTs, recognizing their key role in contractor buy-in
- Emphasize supply chain reliability. The country's 300 million tires produced annually create consistent, domestically sourced material with greater price stability than polymer markets subject to oil and gas volatility

Conclusion

The Southeast demonstrates that RMA delivers proven infrastructure solutions for high heat, heavy traffic, and emerging challenges like electric vehicle fleets. Success across South Carolina, Georgia, and expanding into metropolitan areas like Atlanta shows multiple pathways: collaborative specification

development building on neighbor's experience, performance-based approaches that prioritize field results over laboratory test barriers, and innovative applications addressing urban heat island effects.

The dry process transformation eliminated contractor barriers while maintaining cost advantages over polymers. Moving forward requires sustained collaboration among state DOTs sharing specifications across borders, contractors embracing accessible technology, researchers documenting performance and emerging benefits, and policymakers supporting market-based solutions that advance both infrastructure durability and tire circularity.

Resources on Rubber-Modified Asphalt

Visit the ELT Knowledge Hub, presented by the Tire Recycling Foundation, for the webinar recording and more resources on this topic, including:

- USTMA Rubber Modified Asphalt State of Knowledge (2021)
- Summary of State Specifications for RMA
- Link to webinar recording: https://tirerecyclingfoundation.org/RMAMarketResource

Tire Recycling Foundation Conference:

- Date: May 12-14, 2026
- Location: Denver, Colorado
- Registration: Now Open

Additional Resources

- **ELTs Knowledge Hub:** https://tirerecyclingfoundation.org/marketsresources
- https://tirerecyclingfoundation.org/webinars
- https://www.ustires.org/webinars

Questions or Feedback:

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