



Cool Roadways Partnership

1500 Decatur St NW Washington DC 20011 • Email: Kurt@globalcoolcities.org • Phone: 202-550-5852

Cool Roadway Solutions: Request for Information December 8, 2020

The Cool Roadways Partnership (CRP) represents 20 participants who recognize the need to build heat-resilient communities and are seeking cool roadway solutions to help meet that goal. Together, CRP participants anticipate investing \$4.75 billion to add, maintain, or replace 70,000 lane-miles over the next 10 years. Through this Request for Information (RFI), the CRP is seeking industry partners to work collaboratively with its participants to identify, develop, demonstrate, and deploy cool roadway solutions that can be incorporated into their paving operations. The RFI submissions will be used to inform the CRP's near-term program activities and long-range planning.

Project Overview

Currently, replacing green space with paved surfaces and roadways is seen as a primary driver of increased heat in cities. This RFI is seeking input from manufacturers and distributors of roadway materials willing to invest the time and resources needed to identify or develop products that transform roadways from a barrier to a key solution for improving the heat resilience of our cities. This RFI supports the CRP's plans to:

1. **Identify** existing or develop new and innovative cool roadway solutions, that also may offer co-benefits of reduced lifecycle greenhouse gas (GHG) emissions;
2. **Create** opportunities to demonstrate cool roadway solutions in more places;
3. **Quantify** the market potential for cool roadway materials, leading to a multi-year bulk procurement arrangement with jurisdictions across the U.S.; and,
4. **Establish** a clear set of industry-approved design characteristics and performance criteria for cool roadways.

The Demand for Cool Roadways

Pavement makes up about one third of the surface area of an average city. Faced with long-term projections of rising urban temperatures and an increased frequency of dangerous heat waves, jurisdictions are seeking ways to reduce pavement temperatures to help achieve their sustainability and resilience goals. Cool pavement products and materials reflect, rather than absorb, solar energy which lowers surface temperatures and contributes to reduced air temperatures. A cost-effective, high-performing cool roadway solution is needed that can be smoothly integrated into municipal pavement management operations.



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CRP participants are pursuing a variety of ways to reduce the heat retention of roadways, as part of their efforts to manage urban heat. Reducing air temperatures with cool roadways also provides desirable health and air quality co-benefits, which is particularly important in marginalized, low income communities where the negative effects of heat are most apparent.

CRP participants are in various stages of exploring cool roadways. Some participants are still in the early phases of learning about their use and local benefits, others are already implementing demonstration projects, and a few are currently evaluating cool roadways for inclusion in their pavement management and maintenance operations.

RFI Market Size

The opportunity for cool roadway solutions is substantial. Together, the 20 CRP participants have annual road repair and replacement budgets of \$475 million to address 7,000 lane-miles of streets. Based on current budgets, the participants will have the potential demand for 70,000 lane-miles and a financial investment of \$4.75 billion in cool roadways over the next ten years.

Responding to the RFI

The RFI respondents are invited to provide the requested information and feedback on the attached Response Form. Responses should include input on the timeline to develop an innovative solution that meets the requested criteria and that can be integrated into roadway pavement operations within ten years.

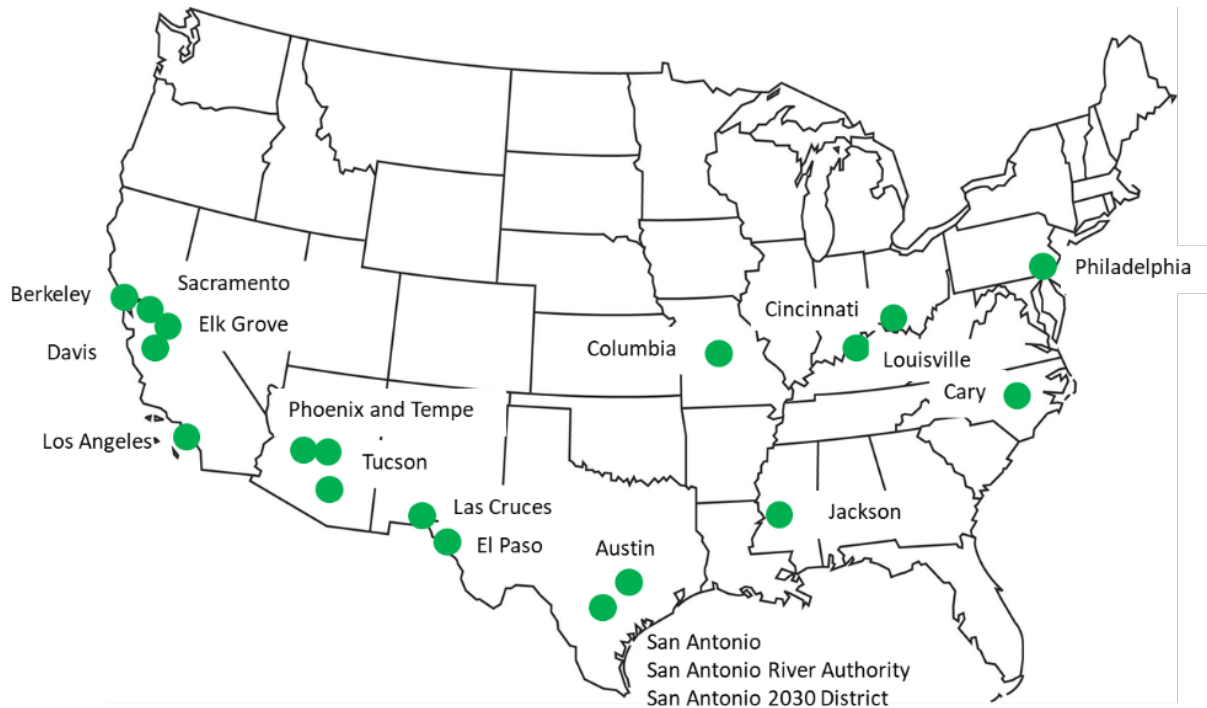
Questions regarding this RFI shall be addressed to Maria Koetter (maria@globalcoolcities.org) no later than February 5, 2021. Responses to questions will be provided by February 19, 2021. Final responses will be collected through March 19, 2021.



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Cool Roadways Partnership Participants (as of December 8, 2020)



- | | | | |
|----------------|----------------|------------------|-----------------------------|
| Austin, TX | Davis, CA | Los Angeles, CA | San Antonio, TX |
| Berkeley, CA | Elk Grove, CA | Louisville, KY | San Antonio River Authority |
| Cary, NC | El Paso, TX | Phoenix, AZ | San Antonio 2030 District |
| Cincinnati, OH | Jackson, MS | Philadelphia, PA | Tempe, AZ |
| Columbia, MO | Las Cruces, NM | Sacramento, CA | Tucson, AZ |



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Cool Roadway Solutions - Request for Information Response Form December 8, 2020

Please provide the requested information and feedback below. Responses should include input on the timeline to develop an innovative solution that meets the requested criteria and that can be integrated into roadway pavement operations within ten years. Please add your responses below each question and send the completed form in a Word file to Maria Koetter – maria@globalcoolcities.org.

Contact Name:	Robert Wilson
Company:	Pavement Surface Coatings, LLC
Email:	bob@pavementsurfacecoatings.com
Phone:	973-632-7426
Solution/Product Name:	Endurablend

Describe how the proposed solution addresses the following (250 word maximum for each response):

1. What is the expected timeline to develop and commercialize the solution if it is not currently available? Endurablend is available now and has been installed for over 10 years as a Coating
2. What surface and air temperature reductions resulting from the roadway solution, daytime and nighttime, have you identified? We have noted an 18 degree C difference in white Endurablend and associated asphalt
3. How simply can the solution be integrated into existing roadway management and maintenance operations? Endurablend is applied topically on asphalt or concrete to existing Substrate at approx 2 mm
4. What is the global warming potential associated with manufacturing the roadway solution in production and use phase? Endurablend is extremely durable, cement based and can be installed in virtually any color
5. Add any additional information for the proposed solution. Attach photos, videos or links to materials demonstrating application, installed condition, and relevant characteristics of the solution such as product material safety data sheets



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Cost and Installation (50 word maximum for each response):

1. Can the solution be purchased and installed by in-house department staff (i.e. does not require a licensed installer): Yes/No No
 - If so, does it require special equipment to install it: Yes/No
If yes, what equipment is needed?
 - If so, what is the cost per square yard for materials: \$/SY
2. What is the cost per square yard for material if installed by contractor: \$/SY Monolithic \$45 to \$90 Per sy and if patterned, \$90 to \$150 per sy
3. What is the average installation rate: SY/Day? On an airport we applied 60,000 sf in a day but in urban environments 10,000 sf per day is more realistic

Use Cases (250 word maximum for each response)

1. What are the appropriate use cases for the solution (e.g., pavement type, age, condition, climate)? Please provide appropriate case studies, testing, and/or supporting research. We have done no studies on albedo and Endurablend. However, we have been on surfaces for 10 years with 60,000 sf per day 2. What are the safety, slipperiness, and friction characteristics (e.g. typical Surface Coefficient of Friction)? Endurablend is applied with either intermixed aggregate or topically applied aggregate to achieve FN40 numbers as high as 65.
3. What is the curing time including how quickly the road can open to traffic after installation given average temperatures, partly sunny, and non-humid conditions? How does this compare to existing relevant products? Endurablend will cure to traffic in 2 to 3 hours after installation in daylight. It is cement based, nighttime cure takes significantly longer
4. Is it sensitive to placement in cool weather, i.e. 50° F and falling? Yes/No Only with regard to cure time Not performance. It is applied at 2 mm and is cement based so cure is temperature sensitive
5. Is it sensitive to placement in high humidity or damp conditions? Yes/No We have noted an 18 degree increase in cure time and associated asphalt
6. How long does this treatment typically last under average traffic conditions in years? How does this compare to similar products? We know of no other products which have been installed for 10 years in 60,000 vehicle per day traffic and still performed.
7. Can it be re-applied over itself for renewal? Yes/No Yes
8. Is it recommended for heavy traffic conditions like urban arterials? Yes/No Yes
9. Are standard MUTCD compliant white and yellow markings clearly visible? Yes/No Yes