



Cool Roadway Solutions: Request for Interest

June 16, 2020

The undersigned represents three cities that are participating in this call to identify and/or develop cool roadway solutions that mitigate the urban heat island effect. Together, these cities have the anticipated need for 24,800 lane miles and a financial investment of \$2.25 billion for cool roadway solutions over the next 10 years.

Project Overview

Pavement makes up about one third of the surface area of an average city. Increasingly, cities are seeking ways for pavement to contribute to their climate, sustainability, and resiliency goals. Faced with long-term projections of rising urban temperatures, growing urban heat islands, and an increased frequency of dangerous heat waves, city leaders are partnering to explore the development of solar reflective, “cool” roadway solutions that can be smoothly integrated into municipal pavement management practices to provide a sustainable, cost-effective way to reduce air temperatures and increase resilience in urban environments.

This Request for Interest (RFI) is seeking input from manufacturers and distributors of roadway materials, coatings, and sealants on their willingness to invest the time and resources needed to develop cost-effective, sustainable cool roadway solutions that could mitigate the impact of asphalt on urban heat islands, decrease the temperature of roadway surfaces and, if possible, reduce the carbon footprint of products by developing new or enhancing existing solutions in the market. It is the hope of participating cities that this RFI will identify the following:

1. a clear set of industry-approved design characteristics and performance criteria for cool roadways
2. new and innovative cool roadway solutions, that also may offer co-benefits of a reduced carbon footprint
3. the market potential for cool roadway materials, leading to a multi-year bulk procurement arrangement with cities across the U.S.

The Demand for Cool Roadways

The cities that are participating in this RFI are pursuing the use of cool coatings, integrated materials, or other solutions to reduce the heat retention of roadways, as part of their resilience efforts to manage urban heat. Reduced air temperatures resulting from the use of cool roadways



also provides co-benefits for health and air quality. Extreme heat adversely impacts the health and vitality of community residents and contributes to air quality issues through formation of ground level ozone.

The participating cities are working on cool surface pilot projects in a variety of settings including sports facilities, public parks, parking lots and the roadways of public streets. Some have already completed multiple pilot projects and are exploring the use of cool roadway solutions in their planning process for citywide pavement management and maintenance. However, a cost-effective roadway solution that meets the criteria specified below does not yet appear to be available in the market.

Market Size Represented in this RFI

The cities participating in this RFI have developed metrics to highlight the market opportunity for cool roadways and their anticipated financial investment in cool roadway solutions. The metrics include:

- \$225 million for road repair and replacement at current spending levels, per year
- 2,480 lane miles of streets new/repared/resurfaced, per year

Based on these metrics, over the next ten years the participating cities will have the demand for 24,800 lane miles and a financial investment of \$2.25 billion in cool roadway solutions.

Deliverables – Desired Outcomes

The RFI respondents are invited to provide information and feedback on the items below. This should include input on what it will take to develop a solution that meets the requested guidance and the timeline to develop it. It is desirable to have a cool roadway solution that can be integrated into roadway pavement materials, as well as one that can be applied to existing asphalt pavement; the coating should both extend the service life of the road surface and result in reduced daytime heat capture and reduced evening heat transmission.

Performance Criteria – *The proposed solution should:*

1. perform the same or better than existing roadway solutions
2. integrate as seamlessly as possible into existing roadway management and maintenance operations – with a near-term focus on coatings that can be applied to asphalt and on a solution that can be integrated into roadway pavement materials within ten years
3. incorporate cool colors or materials for both new surfaces, preservative seals, and maintenance coatings, with a focus on the most cost-effective, multi-benefit solution



4. be more durable than existing products and thereby slow roadway deterioration
5. be applicable for multiple pavement use cases such as parking lots and roadways
6. be used on surfaces that are newly paved as well as aged
7. have supporting case studies and research that shows the solutions performance in cold and hot climate regions, including extreme heat, freeze/thaw and snow conditions
8. demonstrate a net positive effect on climate metrics (e.g., reduced GHG emissions and GHG warming effect) over the full lifecycle of the product

Evaluation Criteria – *Identify the following for each proposed solution:*

1. the air temperature reductions resulting from the roadway solution
2. the safety, slipperiness, and friction characteristics of the roadway solution
3. the curing time of the material including how quickly the road can be back in service after the solution is installed
4. the global warming potential associated with manufacturing the roadway solution (production and use phase)
5. a cost comparison of the proposed roadway solution and current products

Questions regarding this RFI shall be addressed to Kurt Shickman (kurt@globalcoolcities.org) and submitted by (TBD - 30 days following release of RFI).

Participating Cities

Los Angeles, California

Philadelphia, Pennsylvania

Phoenix, Arizona