

Goals and Co-Benefits

of Implementing a Low-Carbon Transportation Materials Program using FHWA Low-Carbon Transportation Materials Grants Program Funding

The Federal Highway Administration (FHWA) identifies the following goals for the Low-Carbon Transportation Materials Grants (LCTM) Program¹:

- Increasing the use of lower carbon materials and products that are used in projects funded under Title 23 United States Code (U.S.C.)²,
- Facilitating the use of low-carbon transportation materials while ensuring appropriateness for use in projects eligible under Title 23 U.S.C.,
- Promoting technology transfer and enhancing workforce development to increase the adoption of environmental quantification techniques used in decision-making by transportation agencies, and
- Encouraging eligible transportation agencies³ (e.g., state, county, and city departments of transportation [DOT], metropolitan planning organizations [MPO]) to begin implementing low-carbon transportation materials program activities and building successful low-carbon transportation materials identification frameworks that eventually may be replicated by other non-eligible recipients to advance adoption of low-carbon transportation materials nationwide.

Transportation agencies may have their own goals for establishing or expanding their own low-carbon transportation materials programs. For some transportation agencies, those goals are directly aligned with the LCTM Program goals, while for others the goals are focused on co-benefits of using low-carbon transportation materials and from participating in the FHWA LCTM Program. A co-benefit can be defined for the purpose of this document as an outcome simultaneously meeting several interests or objectives resulting from participation in the LCTM Program. The LCTM Program funding may produce the following co-benefits for transportation agencies:

- Achieve Cost Savings: Low-carbon transportation materials can have initial cost savings compared with conventional materials, and if they exhibit similar or better performance, they can also have life cycle cost savings. The LCTM Program funding can be used to introduce or expand the use of these materials, which may reduce future transportation agency costs.
- Conserve Finite Resources: Many locations across the country have finite local aggregate resources available for use in construction materials and/or costly hauling distances⁴. Some low-carbon transportation material approaches involve reclaiming of aggregates (RAP, RCA⁵, or processed building demolition, as examples) that meet or exceed performance requirements

¹ Low-carbon Transportation Materials Program Inflation Reduction Act Section 60506, <https://www.fhwa.dot.gov/lowcarbon/>

² 23 USC 179(b)(4)

³ 23 USC 179(c)(2)

⁴ State Aggregate Mapping and Sources Information; https://www.fhwa.dot.gov/pavement/aggregates/producers_map.cfm

⁵ RAP is reclaimed asphalt pavement, RCA is recycled concrete aggregate

and can replace the use of finite aggregate resources⁶. Other approaches that can conserve finite resources and produce low-carbon materials involve recycling (recycled steel and glass, as examples).

- Create or Expand Local Low-Carbon Transportation Material Industries: Some approaches for creating low-carbon transportation materials will result in the creation or expansion of new local industries. LCTM Program funding can be used to benchmark these materials, develop specifications, and use them in construction projects. Where these materials have had sufficient prior research and development to be ready for trial implementation, LCTM Program funding can be used to include these materials in demonstration projects. This will help deliver enough projects to demonstrate that these materials can meet or exceed performance requirements, resulting in expansion of their use.
- Introduce Material Performance Testing, Benchmarking, and Specifications: A goal of the LCTM Program is that low-carbon transportation materials meet appropriate performance requirements for use in an eligible Title 23 construction project. Introduction or increased use of low-carbon transportation materials will likely require improved performance related testing and specifications to ensure that they meet the intended performance requirements of currently used materials, which includes benchmarking of performance of those current materials. The LCTM Program funding can be used to conduct performance related testing, develop specifications (including use of new tests), and benchmark construction materials currently used by transportation agencies and for any new low-carbon transportation materials⁷. For many transportation agencies, this will be the first time that performance-related properties will be tested and compared for any materials.
- Improve Cost and Performance of Materials: The LCTM Program covers a variety of products and materials from eligible product categories (i.e., concrete (and cement), glass, asphalt mix, steel) used in the construction of transportation infrastructure. The eligible material categories and applications include, but are not limited to:
 - Concrete and steel of all types used for bridges,
 - Concrete and reinforcing steel used in flatwork, culverts and drainage elements, barriers, sound walls,
 - Concrete and asphalt mixtures for pavements,
 - Glass used in transportation infrastructure.

The LCTM Program provides an opportunity to review a wide range of transportation material specifications enabling transportation agencies to use low-carbon transportation materials. This can potentially improve the engineering performance requirements for all transportation construction projects.

⁶ FHWA Recycling Policy; <https://www.fhwa.dot.gov/pavement/recycling/index.cfm>

⁷ It is important to note that for these activities to be eligible for LCTM Program funding the agency needs to meet the requirements set forth in the RFA and clarified in FHWA FAQ EM-Q1; How are materials deemed appropriate for process development activities? See response here: <https://www.fhwa.dot.gov/lowcarbon/faq.cfm#ea>

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