

SUMMARY

Funds made available for the LCTM Program will be awarded for the use of substantially lower carbon materials and products on construction projects funded under 23 U.S.C. and necessary work to identify appropriateness for use of these materials on eligible projects.

INTRODUCTION

The purpose of the LCTM Program is to reimburse or provide incentives to eligible recipients for the use, in projects, of construction materials and products that have substantially lower levels of embodied GHG emissions associated with all relevant stages of production, use, and disposal as compared to estimated industry averages of similar materials or products, hereafter referred to as low carbon transportation materials. The program will also serve to help eligible transportation agencies update or develop specification language and conduct identification activities needed to demonstrate materials are appropriate for use on Federal-aid construction projects.

Program goals include:

- Increasing the use of lower carbon materials and products that are used in projects funded under 23 U.S.C.;
- Facilitating the use of low carbon transportation materials while ensuring appropriateness for use in projects eligible under 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 State DOTs to begin LCTM activities and building successful low carbon transportation material identification frameworks that eventually may be replicated by non-State recipients eligible to apply for LCTM funding.

FUNDING METHODS

Under 23 U.S.C. 179(b), eligible recipients that use low carbon construction materials and products on Title 23 projects may either be reimbursed or receive an incentive.

Incremental amount - Eligible recipients that use low carbon construction materials and products on a project funded under 23 U.S.C. may receive an amount of reimbursement equal to the incrementally higher cost of using such materials relative to the cost of using traditional materials, as determined by the eligible recipient and verified by FHWA. See Section 6 Eligibility Information of this RFA for further information on the incremental amount.

OVERVIEW ON LCTM PROGRAM

An agency shall determine the substantially lower embodied carbon thresholds (i.e., best performing 20 percent, 40 percent, and industry averages) for materials/products eligible for reimbursement or incentive under this program through the following options:

Option (1): An agency may reference the established thresholds as referenced on FHWA Website.

Stakeholders from concrete, glass, asphalt, and steel industries are working to provide industry-average data to support implementation of the LCTM Program.

Option (2): An agency may determine local or regional thresholds for concrete (and cement), glass, asphalt mix, and/or steel. In this option, the agency shall follow accepted International Organization for Standardization (ISO) standards to develop thresholds. Agencies shall disclose the Global Warming Potential (GWP), the methodology for determining the percentiles and averages, the source(s) used for each material/product, and the parameters (including performance specification) used to set the GWP.

Agencies may also use a combination of these two options for this program. Under this RFA, the LCTM Program will provide funds directly to States that will implement the provisions of the EPA's ID for eligible low carbon transportation materials/products. State DOTs may also be reimbursed for identification of eligible materials and work needed to determine their appropriateness for use on eligible projects, as discussed more in Section 6 Eligibility Information of this RFA.

FUNDING INFORMATION

An Implementation Process Report(s) (IPR) shall be developed to document a process(es) for how the State DOT plans to implement LCTM activities and increase the adoption of low carbon transportation materials.

The State may choose to develop multiple IPRs to meet the requirements above for different processes or activities undertaken with LCTM funds.

ELIGIBILITY INFORMATION

Under this program, funds are available to use on construction projects funded under 23 U.S.C., including projects on:

- Federal-aid highways;
- Tribal transportation facilities;
- Federal lands transportation facilities;
- and Federal lands access transportation facilities.

Funds are also available to use for activities required to develop a process to demonstrate materials meet the standard of "substantially lower embodied carbon" and are appropriate for use. For purposes of this program, eligible materials categories⁸ are concrete (and cement), glass, asphalt mix, and steel.

While LCTM funds are eligible for up to 100 percent Federal share, LCTM funds may only be applied to eligible activities associated with the use of the low carbon transportation material.

If a reimbursement is provided under this LCTM Program, the total Federal share payable for the incremental costs or incentive amount shall be 100 percent. Identification of eligible materials and work needed to determine their appropriateness for use on eligible projects can be considered as wholly incremental, i.e., the work would not have been done except for the availability of this program, and an application could request reimbursement for 100 percent of these costs.

The applicant could achieve LCTM goals outlined in Section 1 Introduction of this RFA and seek reimbursement under the LCTM Program for costs incurred in a variety of ways. This could include, but is not limited to, the series of activities outlined in Table 1. Example LCTM Eligible Activities and Funding Method.

Table 1. **Example LCTM Eligible Activities** and Funding Method

Low Carbon Transportation Materials Identification Process Development		
Categories of Activities	Example Eligible Activities	Funding Method ¹⁰
Process for Substantially Lower Embodied Carbon	<ul style="list-style-type: none"> • Development of Implementation Process Report(s) <i>Example: Agency contracts with entity to assist in development of IPR(s) on selected materials or processes.</i> • Academia or Consultant support to identify eligible materials, training needs, additional data, and special provision development. <i>Example: Agency enters into a contract with a consulting firm to identify materials (concrete (and cement), asphalt, cements, steels, glass) that are eligible and available in the region.</i> • Stakeholder Outreach and Coordination. <i>Example: Agency conducts listening session(s) or partnering meetings with industry, labor, environmental, and community stakeholders.</i> • Development of process to collect and store EPDs. <i>Example: Agency contracts with entity to create and host an EPD database.</i> • Identification of local or regional “substantially lower” embodied carbon thresholds that meet ISO acceptable practices.¹¹ <i>Example: Agency contracts with consultant to identify thresholds from relevant industry reports containing region-specific information.</i> <i>Example: Agency contracts with consultant to conduct an ISO-conformant analysis to identify their agency-specific regional thresholds.</i> • LCTM Training. <i>Example: Agency conducts or hires an entity to conduct training for staff, consultants, and contractor personnel on identifying and/or</i> 	Incremental amount

	<p><i>using low carbon transportation materials, using EPDs, and any new agency-specific processes.</i></p>	
<p>LCTM Quality Assurance (QA) and LCTM Specifications</p>	<ul style="list-style-type: none"> • Development of Implementation Process Report(s). <i>Example: Agency contracts with entity to develop IPRs detailing new QA processes and/or implementation steps for new material special provisions or specification updates.</i> • Development of QA Plans and/or Performance Monitoring Plan for the material <i>Example: Agency develops QA plan or a Performance Monitoring Plan for projects constructed with low carbon transportation materials.</i> • Stakeholder Outreach and Coordination <i>Example: Agency hosts listening sessions with industry, labor, environmental, and community stakeholders on new QA processes or new special provisions</i> • Update of existing material specifications or development of new special provision to facilitate use on projects. <i>Example: Agency contracts with a university to test asphalt mixture combinations that meet the requirements of “substantially lower embodied carbon” and meet Agency engineering performance criteria. The university then develops a new special provision for appropriate mixtures.</i> • Preliminary mixture design and testing to evaluate materials. <i>Example: Agency enters into a contract with a consulting firm to identify data gaps or conduct additional testing needed to ensure satisfactory performance on an eligible Federal-aid project</i> <i>Example: Agency contracts with university to conduct testing and evaluation on a wide combination of mixtures of materials likely to meet low carbon definition to ensure they are</i> 	<p>Incremental amount</p>

	<p><i>appropriate for use on eligible Federal-aid projects.</i></p> <ul style="list-style-type: none"> • Testing Equipment to properly accept and verify LCTM. <i>Example: Agency purchases test equipment they do not currently have but is needed to properly assess engineering performance and accept low carbon materials, such as a new asphalt cracking performance test device.</i> • LCTM Test Strips. <i>Example: Agency places short sections of a concrete pavement with an eligible mixture to ensure the mixture is placeable and appropriate for use on eligible Federal-aid projects.</i> • Development of a verification process for LCTM and EPDs. <i>Example: Agency contracts with consultant to develop a process to collect EPDs and other required information on a project and determine if the materials meet eligibility requirements.</i> • Training. <i>Example: Agency contracts with university to conduct training on their low carbon related QA processes and new special provisions targeted at agency staff and consultants.</i> 	
<p>Construction Project Identification</p>	<ul style="list-style-type: none"> • Development of IPR. <i>Example: Agency contracts with consultant to develop an IPR detailing how eligible materials will be implemented on eligible construction projects.</i> • Identify Construction Projects. <i>Example: Agency identifies eligible projects that would be appropriate for inclusion of eligible materials (most likely included in the State's Statewide Transportation Improvement Program).</i> • Develop a plan for incorporation of LCTM on construction projects. 	<p>Incremental amount</p>

	<p><i>Example: Agency develops a plan to incorporate eligible materials on eligible construction projects.</i></p> <ul style="list-style-type: none"> • Development of project-specific construction contract language. <i>Example: Agency modify its special provision for project specific criteria.</i> • Industry Outreach and Coordination. <i>Example: Agency conducts outreach to industry and construction contracts and material suppliers to communicate activities, requirements, and special provisions.</i> • Training. <i>Example: Agency contracts with a university to conduct agencywide training for agency staff and consultants on the low carbon QA process and material special provision.</i> 	
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Use of Eligible Materials on Construction Projects

Categories of Activities	Example Eligible Activities	Funding Method
Use of LCTM on Projects	<ul style="list-style-type: none"> • Identification of eligible Federal-aid projects. <i>Example: Agency contracts with a consultant to identify construction projects that would make the most sense on which to incorporate low carbon transportation materials (most likely included in the State’s Statewide Transportation Improvement Program).</i> • Estimation of costs of LCTM. <i>Example: Agency contracts with a consultant to estimate costs of eligible materials.</i> • Comparison of LCTM costs and traditional material cost. <i>Example: Agency contracts with a consultant to compare costs of low carbon transportation materials with conventional materials.</i> • LCTM Bid Items (added solely to facilitate use of LCTM). <i>Example: Agency pays for additional line items that are needed to implement low carbon</i> 	Incremental amount or incentive amount

	<p><i>transportation materials effectively and appropriately on construction projects.</i></p>	
Substantially Lower Embodied Carbon	<ul style="list-style-type: none"> • EPD Bid Item. <i>Example: Agency adds a pay item for a line item for EPDs collection in order to determine if a material meets low carbon material definition.</i> • Collection of Energy Star Performance Score. <i>Example: Agency request reporting of Energy Star performance scores by material suppliers, as required by EPA's ID.</i> • Quality Incentives for environmental performance. <i>Example: Agency offers quality incentives for eligible low carbon materials to contractors as part of the special provision(s).</i> • Other costs for the use of substantially lower carbon materials. <i>Example: Agency incurs additional costs to implement low carbon transportation materials and requests reimbursement in accordance with all Federal regulations and cost control provisions (e.g., costs are not included as part of overhead expenses).</i> 	Incremental amount or incentive amount
Quality Assurance and Acceptance	<ul style="list-style-type: none"> • LCTM test strip. <i>Example: Agency places short sections of low carbon transportation materials to ensure they can be produced at production scale, are placeable, and meet engineering requirements in a production environment.</i> • Additional testing equipment and/or testing required to accept low carbon materials. <i>Example: Agency purchases resistivity test equipment to assess low carbon concrete in accordance with their special provision.</i> <i>Example: Agency contracts with consultants to conduct additional testing necessary to accept low carbon transportation materials (as outlined in the special provision).</i> 	Incremental amount or incentive amount

	<ul style="list-style-type: none"> • Verification that material placed meets thresholds for substantially lower carbon. <i>Example: Agency contracts with consultants to conduct analysis to ensure materials meet criteria for low carbon transportation materials.</i> • Verification of engineering properties of the LCTM. <i>Example: Agency contracts with consultants to conduct additional testing necessary to assess if in-place low carbon materials meet design criteria.</i> • Quality incentives for engineering performance. <i>Example: Agency offers quality incentives to facilitate low carbon transportation material usage.</i> 	
Use of Materials and Products on Construction Projects	<ul style="list-style-type: none"> • Development of Project-specific Performance Monitoring Plan. <i>Example: Agency contracts with university to develop a project-specific plan to monitor and assess long term performance of low carbon transportation materials.</i> • Construction and placement costs of using eligible materials on eligible projects. <i>Example: Agency implements the use of concrete maturity testing to minimize traffic opening delays when using eligible materials</i> • Reporting of results from Long Term Performance Monitoring Plan. <i>Example: Agency contracts with university to develop a project-specific long term reporting mechanisms on low carbon transportation materials</i> 	Incremental amount or incentive amount

APPLICATION AND SUBMISSION INFORMATION

Starting on March 12, 2024, until 11:59 p.m. EST on June 10, 2024, State DOTs can directly apply to this RFA by submitting their Application Materials, outlined in Table 2, to the program inbox at FHWALowCarbonMaterials@dot.gov;

- Amendment: The time-of-day deadline on June 10, 2024, to submit applications was updated to 11:59PM EST in the Program Details table, Section 7, and Section 10.

FHWA recommends, but does not require, that the Technical Application include the following sections:

i. **Technical Description:** The applicant should provide a concise description of the anticipated activities and scope of work of the application, including a discussion of any relevant agency history or broader context the applicant deems relevant. Describe how the applicant proposes to meet one or more of the program goals, outlined in Section 1 Introduction Section 1 of this RFA. This section should include a description and scope of work, including planned major activities, milestones, and deliverables. The application can provide a technical and management narrative describing how the applicant proposes to carry out the planned work.

ii. **Team Information:** This section of the application should provide details about the State DOT and information about the agency's staffing structure and anticipated partners or other entities that will be engaged to support the scope of work described in the application.

iii. **Overall Readiness:** The application should include information that, when considered with the budget information, demonstrates the applicant's ability to substantially execute and complete the full scope of work in the application before expiration of funds. The applicant should demonstrate a sound, feasible, and achievable technical and management approach to successfully perform and complete the proposed scope of work. The application should articulate the likelihood of success for the project and include major activities and milestones. The application should include the basis for the cost estimate presented in the application, including the identification of contingency levels appropriate to any scope, schedule, and budget risk-mitigation measures.

o **Schedule:** The applicant should include a schedule that identifies major activities and associated milestones. The proposal should demonstrate that the work is ready to begin soon after award is announced and to be complete before expiration of funds. Examples of such milestones include approval of request for proposals; procurement authorization; and project partnership and implementation agreements. The project schedule should be sufficiently detailed to demonstrate that all necessary activities will be completed to allow LCTM Program funds to be obligated as indicated in the project schedule in the application, and all work tasks can be completed during the period of performance.

o **Project Risks and Mitigation Strategies:** The applicant should identify risks to the likelihood of successful initiation and completion of work (e.g., procurement delays or lack of legislative or administrative approval) and the strategies that the applicant and any project partners have undertaken or will undertake to mitigate those risks.

iv. **Eligible Application Factors:** The applicant should describe how the proposal meets the application factors listed in Section 8: Application Review Information of this RFA.

- **Additional Supporting Documentation**

Additional supporting documents (e.g., technical information, letters of endorsement) may be submitted as Supporting Documentation to the application and do not count toward the 15-page Technical Application page limit but must not exceed 10 pages. Applications should clearly reference within the Project Narrative the relevant supporting document.

Construction Projects: FHWA recognizes that, in some cases, significant material and product identification work might be needed before a State DOT can readily determine which construction projects can incorporate LCTM activities or materials. In these cases, the application is encouraged to identify a range of potential and eligible construction projects that could incorporate LCTM processes. IPR(s) shall be approved by FHWA before FHWA issues authorization to proceed or obligate funding for construction projects.

8. APPLICATION REVIEW INFORMATION

FHWA will evaluate applications for eligible projects using the following eligible application factors. Applications must adequately address each factor and subfactor to receive funds.

Factor #1: Substantially Lower Embodied Carbon Identification

Application shall identify how the State DOT plans to investigate which materials it will assess for inclusion in construction projects funded under 23 U.S.C. and how those materials will be assessed for meeting the definition of “substantially lower embodied carbon” as defined by the EPA’s ID.

- (1) Identification of eligible construction materials:
- (2) Energy Star Performance Score:
- (3) EPD Process:
- (4) Substantially Lower Embodied Carbon Threshold:

Factor #2: Quality Assurance and Materials Acceptance

Applications shall identify how the State DOT intends to assess identified materials as appropriate for use on a Federal-aid project.

- (1) Material Specification:
- (2) Verification Process:
- (3) Monitoring:

Factor #3: Use of Materials and Products on Construction Projects

A key requirement of the LCTM Program is implementing Factor #1 and #2 on construction projects. The application shall outline how the recipient plans to facilitate the use of materials on eligible projects.

- (1) General Approach:
- (2) Industry Outreach:
- (3) Calculating Incentive or Reimbursement for Materials with “Substantially Lower GWP” on Construction Projects:
- (4) Specific Construction Projects:

Factor #4: Schedule and Budget

(1) The application shall include a description of start and end dates and an estimated budget for each major activity, milestone, and deliverable.

(2) The estimated budget appears commensurate with the application's technical narrative and conforms to applicable cost principles.

(3) The application clearly identifies eligible activities as being completed by the expiration of funds.

Note: States can use LCTM funding to support agency staff if:

The salaries of administrative and clerical staff should normally be treated as indirect (F&A) costs. Direct charging of these costs may be appropriate only if all of the following conditions are met:

- (1) Administrative or clerical services are integral to a project or activity;
- (2) Individuals involved can be specifically identified with the project or activity;
- (3) Such costs are explicitly included in the budget or have the prior written approval of the Federal awarding agency; and
- (4) The costs are not also recovered as indirect costs.

from 2 CFR §200.413