COLORADO
Department of Transportation
Office of the Chief Engineer

Materials and Geotechnical Services Branch
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Revised 6/3/2025 to align with CDOT Standard Special Provision (SSP) Revision of Section 106 – Environmental Product Declarations (published 7/1/2025)

BUY CLEAN COLORADO ACT POLICY

Intent

Colorado House Bill 21-1303 (HB 21-1303)[1], or The Buy Clean Colorado Act (BCCO), is focused on reducing embodied carbon emissions of state public projects by means of eligible material selection. The BCCO Act requires the Colorado Department of Transportation (CDOT) to establish a maximum acceptable global warming potential (GWP) limit for each category of eligible materials, which include asphalt and asphalt mixtures, cement and concrete mixtures, and steel. Through design optimization and responsible selection of materials, the reduction of embodied carbon emissions from materials utilized in the transportation sector can be accomplished.

Overview of HB 21-1303

HB 21-1303 was signed into Colorado Law in July of 2021. The bill as written requires both the Office of State Architect (OSA) and the Colorado Department of Transportation (CDOT) to establish maximum Global Warming Potential (GWP) limits for materials used in eligible projects. Requirements of the bill specific to CDOT can be found in the Colorado Revised Statutes (C.R.S.), Section 24-92-118. The overview contained below is specific to CDOT's portion of the bill only.

Details on OSA's portion of the bill can be found at the following webpage: https://osa.colorado.gov/energy-environment/buy-clean-colorado-act

By January 1, 2025, CDOT is to introduce a policy to determine and record greenhouse gas (GHG) emissions from eligible materials used in a public project with the goal of reducing GHG emissions. CDOT has done so through the use of a nationally or internationally recognized database of EPDs, collection of EPDs, and through development of a tracking/reporting process consistent with the criteria in an EPD. This document is intended to satisfy CDOT's policy requirement portion of the Bill.

The bill requires the Contractor who is awarded an eligible project to submit a current Environmental Product Declaration (EPD) for each of the eligible materials identified by CDOT Bid Item number or inclusive material listed in Table 106-4 of the CDOT Standard Special Provision (SSP) Revision of Section 106 – Environmental Product Declarations[2].

EPDs for CDOT materials published between October 2, 2021, and November 18, 2024, were used to establish GWP limits for eligible materials items via CDOT policy. GWP limits will be listed in Table 106-6 of the CDOT SSP Revision of Section 106 – Environmental Product Declarations. CDOT may establish additional subcategories with distinct GWP limits within each eligible material category.

Statutory Authority

Colorado Revised Statutes (C.R.S.):

C.R.S. 24-92-117 Maximum global warming potentials for materials used in eligible projects – buildings – projects that are not roads, highways, or bridges

C.R.S. 24-92-118 Maximum global warming potential for materials used in public projects – road – highway – bridge projects

Definitions as used throughout this document:

(A) **Asphalt Mixture** - A plant-produced composite material consisting of asphalt binder and aggregates; the mixture may also include other materials if required and approved by CDOT. The mixture shall be in compliance with applicable CDOT specifications for the project.

(B) **Concrete Mixture** - A plant-produced composite material consisting of cement, water, and aggregates; the mixture may also include other materials if required and approved by CDOT. The mixture shall be in compliance with applicable CDOT specifications for the project.

(C) **Contractor** - "The individual, firm, or corporation contracting with the State of Colorado through the Department of Transportation for performance of prescribed work."[3] Per HB 21-1303, the contractor who is awarded the contract is responsible for obtaining EPDs from the subcontractor or supplier(s) for eligible materials as applicable and submitting them to CDOT.

(D) **Eligible material** - "Materials used in the construction of a public project, including, but not limited to:

(I) Asphalt and asphalt mixtures

(II) Cement and concrete mixtures

(III) Steel"[4]

(E) **Environmental Product Declaration, EPD, or Type III EPD** - A third-party verified document that summarizes the life cycle assessment (LCA) of a single product and publicly discloses its environmental impacts. EPDs enable comparisons between products serving the same function. For this document, an EPD shall consist of a Type III Environmental Product Declaration, which is an environmental declaration providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information as defined by the International Organization for Standardization (ISO) (ISO, 2010).

The environmental information of an EPD is subdivided into four life cycle stages, being the production, construction, use and end-of-life stage. The life cycle stages are divided into modules. An EPD may cover different combinations of modules, i.e., cover different life cycle stages or parts thereof. EPDs covering modules (A1-A3) are referred to as cradle-to-gate EPDs and the associated emissions are often referred to as embodied carbon. Cradle-to-gate EPDs cover the mandatory production stage that includes the following information modules; extraction and upstream production (raw material supply), transport to factory and manufacturing (ISO, 2017). This policy refers to cradle-to-gate EPDs when EPDs are mentioned. Cradle-to-gate EPDs contain the following modules:

- A1 module - raw material extraction and processing
- A2 module - transport of raw materials up to the factory or plant and internal transport
- A3 module - manufacturing

Types of EPDs

- Facility-specific
  - An EPD in which the environmental impacts can be attributed to a single manufacturer and manufacturing facility.[7]
- Product-specific
  - An EPD that represents the impacts for a specific product and manufacturer, potentially across multiple facilities.[7]
- Supply-chain-specific
  - An EPD that is product-specific and that uses supply chain–specific data in the LCA to model the impacts of key processes upstream in a product's supply chain.[7]

(F) **Global warming potential or GWP** - The heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide (CO_2). Global Warming Potential is expressed in kilograms (kg) of carbon dioxide equivalents, CO_2-eq, over a 100-year time horizon as defined in the latest version of the Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts (TRACI) impact assessment methodology developed by the Environmental Protection Agency (EPA) [Bare, 2012]. In other words, "the potential climate change impact of a product or process as measured by an LCA, reported in an EPD."[6]

(G) **Greenhouse gas or GHG** - A gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect and has the same meaning as set forth in section C.R.S. 25-7-140[6], C.R.S., which includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).[6]

(H) **GWP Benchmarking** - The process to collect, analyze, and relate GWP data of comparable construction materials. A Benchmark is a reference point against which comparisons can be made.

(I) **Life Cycle Assessment (LCA)** - An independently verified study of a product or building. Product-level LCAs must be done in accordance with ISO 14040 and ISO 14044 for incorporation in a product's environmental product declaration.

(J) **Limit Value** - In accordance with ISO 21678 the benchmarks established in this document are limit values. A GWP limit value is the highest acceptable GWP level allowed for a supplied material and is inclusive of the A1 through A3 modules for the materials as listed under the Environmental Product Declaration definition above.

(K) **Precast and Prestressed Element** - A construction product produced by casting concrete in a mold or "form" which is then cured in a controlled environment, transported to the construction site and maneuvered into place; examples include precast girders, panels, guardrail, pipes, inlets, or other underground drainage elements, etc. These products typically will incorporate reinforcement elements, which may include reinforcing steel, strand, wire mesh, etc., and they may be pre-stressed at the casting location.

(L) **Product category rule (PCR)** - A set of specific rules, requirements, and guidelines necessary for developing Type III environmental declarations for one or more product categories. The PCR provides the instructions for how the life-cycle assessment (LCA) should be conducted. It sets out what needs to be considered, including but not limited to, system boundaries, declared/functional units, how to define the use phase and end-of-life options, and what impact categories need to be assessed. PCRs ensure that functionally similar products are assessed in the same way when conducting the LCA and for product comparison.

(M) **Project Engineer** - The Chief Engineer's duly authorized representative who may be a CDOT employee or an employee of a consulting engineer (consultant) under contract to CDOT as defined below[3]:

> (a) CDOT Project Engineer: The CDOT employee, assigned by the Resident Engineer, who is the Chief Engineer's duly authorized representative. The CDOT Project Engineer is in direct charge of the work and is responsible for the administration and satisfactory completion of the project under contract.
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> (b) Consultant Project Engineer: The consultant employee under the responsible charge of the consultant's Professional Engineer who is in direct charge of the work and is responsible for the administration and satisfactory completion of the project. The Consultant Project Engineer's duties are delegated by the CDOT Resident Engineer per the scope of work in the consultant's contract with CDOT. The Consultant Project Engineer is not authorized to sign or approve Contract Modification Orders.

(N) **Public Project** - All publicly bid construction projects, projects from within the asset management, or other projects as determined by the department.

(O) **Sourced** - The act of supplying, acquiring or procuring a product that is ready for installation.

(P) **Steel -**

(a) Reinforcing Steel: A metal construction material that is used in concrete to provide additional tension and compression strength. Reinforcing steel includes rebar, epoxy-coated rebar, stainless-steel, etc.

(b) Structural Steel: Consists of the elements of the structural frame that are shown and sized in the structural design documents and are essential to support the design loads. (ANSI/AISC 303-22).

(c) Other Steel: other steel, iron, or metal items that are not generally described as Structural Steel per ANSI/AISC 303-22, including steel used as piling or piling accessories that are formed into typical structural steel shapes such as H-piles, or pipe piles.

(Q) **Subcontractor** - "An individual, firm, corporation, or other legal entity to whom the Contractor sublets part of the Contract. A subcontractor shall include an individual, firm, or corporation who meets one or both of the following criteria:

(a) Establishes a fabricating process or facility exclusively for the use of the Project, whether on or off the site of work per 29 CFR 5.2(l)(1) and 29 CFR 5.2(l)(2). 101-10

(b) Performs work that is incorporated within the Project limits."[3]

(R) **Supplier** - An individual, firm, or corporation who meets one or both of the following criteria:

(a) Fabricates or processes a material not on the site of work per 29 CFR 5.2(l)(3).

(b) Delivers material directly to the project. In both cases, the material shall be intended for permanent incorporation into the worksite.[3]

Contractor Responsibilities

EPD Process:

A. During eligible material procurement, contractors shall work with material suppliers and subcontractors to collect compliant EPDs. Online tools may be used to obtain an EPD given that the EPD corresponds to the material and is compliant with the BCCO Act and CDOT's GWP limits.
B. Contractors who are awarded a project to submit EPDs for all permanently installed eligible materials prior to installation at the site. EPDs supplied by the contractor may be requested with each construction purchase. Project engineers shall verify the installment of eligible materials. Contractors shall furnish EPDs to the project engineer/design team and submit them via the EPD submission form prior to installation. Materials subject to this statute shall not be installed on the project until the contractor obtains an EPD for that material.

Future EPD Submittal Requirements

It is expected that requirements for product-specific, facility- specific, supply-chain specific, and regional-specific data will become more strict. Uncertainty factors may be applied to GWP values shown in EPDs to account for non-facility specific and supply-chain specific data used when developing them. Ongoing outreach with industries producing and placing eligible materials will continue. It is expected that more materials will require EPD submittals, such as cold-rolled steel elements (e.g., guardrail and corrugated metal pipe) and material resources that are constituents of mix designs that are relevant for the GWP of the product supplied to CDOT (e.g. asphalt binder, emulsions, additives, cement, and admixtures). Improvements to existing EPDs and PCRs for other industries will also be expected. It is expected that EPD requirements will expand to projects other than CDOT Engineering projects such as Local Agency projects. The $3 Million project threshold will be used for the initial EPD collection effort and may be revised in the future to include projects with a smaller engineer estimate bid item total. CDOT may include transportation-related emissions (Stage A4) as part of the GWP emissions.

The information utilized to determine the eligible material GWP thresholds is subject to change due to background data updates. EPDs typically expire after 5 years. Therefore, each industry may improve its data and EPD information within the 5 years, resulting in more accurate EPDs. In addition, individual material suppliers will generate new product-specific EPDs continuously using facility-specific, supply chain-specific input data. Improved and more accurate background EPD information will result in changes to materials category GWP limit values as determined during benchmarking analysis.

Establishing New Material Categories

CDOT may establish subcategories within each eligible material with distinct maximum acceptable GWP limits. Table 106-6 of the EPD specification lists all eligible materials items having sufficient existing GWP data to establish Limit Values through the benchmarking analysis process. CDOT will establish new material categories and conduct benchmarking for setting appropriate Limit Values when necessary. New categories will be added to Table 106-6 of the EPD specification. Significant changes in construction materials engineering/design properties or material composition may trigger a new material category. When statistically viable GWP data becomes available for an existing CDOT construction material type, a new material category will be created for that material. Triggering actions may also include CDOT modifications to engineering performance requirements of existing specified construction materials or the creation of an entirely new classification of material meeting new specifications for engineering performance properties.

Modifying Existing GWP Limit Values

CDOT may reissue the GWP Limit Values table when new materials categories are created or when changes in EPD data justify limit value changes.

Exhibits (By Reference)

[1] Colorado House Bill 21-1303

[2] CDOT Standard Special Provision Revision of Section 106 – Environmental Product Declarations

[3] CDOT Standard Specifications for Road and Bridge Construction Section 101.02

[4] C.R.S. §24-92-118 (2)

[5] C.R.S. § 25-7-140

[6] OSA Webpage

[7] Lewis, M., Huang, M., Waldman, B., Carlisle, S., and Simonen, K. (2021). Environmental Product Declaration Requirements in Procurement Policies. Carbon Leadership Forum, University of Washington. Seattle, WA.

END OF POLICY