

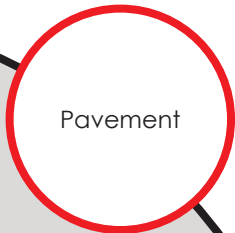


Caltrans Division of Research,
Innovation and System Information

Research



Results



Pavement

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Project Title:

Support Caltrans with Environmental Product Declarations (EPDs)

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Support Caltrans with Environmental Product Declarations (EPDs)

This Task supported Caltrans plans and efforts for the implementation of EPDs.

WHAT WAS THE NEED?

Human activity produces emissions to air, water, and/or land—whether it is due to production/manufacturing of goods and energy or to movement/transportation of goods and people—and depletes the finite resources in nature. Making production, transportation systems, and technologies more efficient and sustainable requires quantitative data about their energy use and emissions. With these data, the consequent impacts for these full systems and their complete life cycles can be determined. An EPD is a transparent, verified report used to communicate the environmental impacts (e.g., resource use, energy, emissions) associated with the manufacture or production of construction materials such as asphalt, cement, asphalt mixtures, concrete mixtures, or steel reinforcement. EPDs, also called Type III Environmental Declarations, are product labels developed by industry in accordance with ISO Standard 14025 (5). The scoping document for an EPD, which is also referred to as a product category rule (PCR), defines the requirements for EPDs for a certain product category. To publish an EPD for a product, an LCA must first be conducted. EPDs can be created using an industry-average LCA developed for the PCR's product or group of products, or it can be more specific to a particular region or a specific plant (6). The more localized it is, the better.

In the United States, the scope of most civil works materials EPDs does not cover the complete life cycle. More specifically, their scope includes only the materials extraction and production phases and transportation to the point at which a product leaves the gate of the production plant for the construction site. This scope is sometimes referred to as "cradle-to-gate." It is consistent with the design-bid-build project delivery processes (which are also called "low-bid") typical of most state departments of transportation, where material producers are not responsible for transportation to the construction site, construction, or use of the product.



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WHAT WAS OUR GOAL?

The objective of this Task was to support Caltrans plans and efforts for the implementation of EPDs.

WHAT DID WE DO?

We developed plans for EPDs; reviewed PCRs and EPDs for consistency and inconsistencies; helped with implementation strategy with industries and the Federal Highway Administration; and built a database in coordination with national efforts. We finally provided a summary report.

WHAT WAS THE OUTCOME?

This finally summary report documented the roadmaps developed for collecting and using EPDs, other support activities for the Caltrans EPD program, and a review of the EPDs supplied to Caltrans as of the summer of 2020 and their underlying PCRs. The PCRs for the materials in the Caltrans EPD program had inconsistencies that should be relatively simple to resolve with direction from Caltrans. In their current form, consistent data entry is difficult in the Caltrans EPD portal. To improve the consistency and quality of EPDs, Caltrans staff must receive guidance on how to review EPDs, and staff at materials producers require training about how to interpret PCRs to produce EPDs. Systems for inputting data from EPDs into department of transportation (DOT) reporting systems that include data quality checks, system consistency, and certification are also needed. Similarly, a nationally accepted and adopted data quality assessment standard is needed for EPDs as DOTs move toward their use in procurement. A single data quality matrix should also be included in a harmonized PCR.

WHAT IS THE BENEFIT?

Beginning in 2019, Caltrans initiated a pilot study requiring EPDs for hot mix asphalt, aggregates, and concrete in addition to the materials specified by the Buy Clean California Act (BCCA) (Assembly Bill 262). The requirement to submit EPDs for these materials is how plans made several years prior to passage of the BCCA, for use of EPDs to help achieve environmental goals, are being implemented. While the BCCA considers only the greenhouse gas emissions contributing to global warming, the Caltrans pilot program for pavement and bridge materials also looks for other emissions in the EPDs, primarily emissions that cause air pollution.