

Nucor Provides Transparency of Steel's Environmental Impact in Expert Collaboration with Trinity Consultants



Challenge

Nucor needed EPDs to demonstrate compliance with California's new requirements for building materials used in state projects, however assessing the environmental impact of raw materials and fuels from cradle to gate required site-specific data to support the EPDs.



Solution

Trinity collaborated with Nucor to understand their manufacturing process, identify data gaps, create reasonable assumptions to cover the gaps, and construct EPDs meeting BCCA requirements.



Result

Nucor expanded its work with Trinity to develop a sustainability strategy paving the way for all of their products and facilities to demonstrate compliance with evolving "green" standards.

A career network connection between decision-makers at Nucor Corporation and Trinity Consultants set the stage for an ongoing project engagement wherein Trinity's Sustainability and Assurance team is now developing an expanding list of Life Cycle Assessments (LCAs) and Environmental Product Declarations (EPDs) for Nucor's various product lines.

Nucor and its affiliates manufacture steel and steel products at more than 300 operating facilities mostly in North America. Nucor's Seattle, WA mill was the first site to engage Trinity's LCA team to provide an EPD developed in compliance with the State of California requirements under the Buy Clean California Act (BCCA). BCCA establishes embodied carbon limits for structural steel, concrete reinforcing steel, flat glass, and mineral wool board insulation used in state infrastructure projects.

After this first engagement, Nucor moved to replace their previous vendor by engaging Trinity to produce additional EPDs and associated LCAs in Q2 2022. BCCA's deadline to comply was set for July 1, 2022.

Challenge

EPDs are based on LCAs of the product's value chain including the raw materials and fuels used to manufacture a specific product. The development of an EPD requires that the product's value chain be assessed for its environmental impact, from "cradle to gate." That is, from the moment a raw material comes out of the ground to the point where the finished product leaves the manufacturing facility's gate. This includes any fuel, electricity, or other inputs used in manufacturing the product.

Detailed data concerning these inputs can often be difficult to obtain. In some cases, comparable data must be used to clarify emission factors using reasonable assumptions, all of which makes creating EPD models extremely complex.

Solution

Trinity's engineers came to the table experienced in working with clients in the steel manufacturing sector. However, gaining clarity on Nucor's specific process flow and "cradle to gate" value chain would require a broad and deep discovery process conducted under a compressed timeframe.

Trinity worked closely with the client to identify data sources essential to constructing the various LCAs needed for a valid EPD. In several cases, complex calculations had to be created to reflect credible air emission factors where data was unavailable.

These data were then entered into a specialized LCA software tool to arrive at an EPD suitable for BCCA review. In the analysis, Nucor was able to publish an EPD demonstrating compliance with BCCA requirements in May 2022, two months ahead of the BCCA deadline.

Result

Nucor used its successful west coast experience to launch ongoing EPD projects, engaging Trinity as its preferred partner to develop life cycle environmental impact assessments and declarations for products and facilities across its entire portfolio.

In 2022, 31 LCAs were completed and 4 EPDs were published. In 2023, another 33 LCAs and 9 EPDs will be conducted.

Nucor is using the findings to chart a global sustainability strategy that will reduce its carbon emissions across the corporate footprint. Indeed, with Trinity as its Sustainability and Assurance partner, Nucor has strengthened its brand as a sustainable manufacturing entity.

We are very impressed by Trinity's willingness to engage with full transparency on the LCA and EPD process, truly working as a partner with Nucor to achieve our ESG goals. Their collaboration and understanding of the declaration process, ability to identify and bridge data gaps, and quickly model EPDs for our family of steel products was outstanding, and I look forward to a continued partnership. – Nucor Sustainability Specialist

About Trinity

Founded in 1974, Trinity Consultants helps organizations overcome complex, mission-critical challenges in EHS, engineering, and science through expertise in consulting, technology, training, and staffing. We support clients in geographies worldwide and across a broad range of sectors including industrial, energy, manufacturing, mining, life sciences, and commercial/institutional.