



NATIONAL STONE, SAND  
& GRAVEL ASSOCIATION

May 1, 2023

Honorable Michael S. Regan  
Administrator  
Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.,  
Washington DC, 20460

Re: Request for Information (RFI) to Support New Inflation Reduction Act (IRA)  
Programs to Lower Embodied Greenhouse Gas Emissions with Construction Materials  
and Products, Docket EPA-HQ-OPPT-2022-0924

Administrator Regan:

On behalf of the 400 members of the National Stone, Sand and Gravel Association, we appreciate the opportunity to provide feedback and response to the EPA's RFI to support new IRA programs to lower embodied greenhouse gas emissions with construction materials and products.

NSSGA is the leading voice and advocate for the aggregates industry and the businesses that supply them, with member companies representing more than 90 percent of the crushed stone and 70 percent of the sand and gravel consumed annually in the United States. Our members are responsible for the essential raw materials for developing all infrastructure and are key to producing renewable energy sources as well as sustainable public works projects. From new electric vehicle charging stations, to natural gas and hydrogen production and transportation, our members stand ready to supply the needed construction materials for these projects that will be needed to reduce emissions across the transportation industry.

In producing these needed materials, NSSGA members run their operations effectively to maintain air and water quality and are always working to reduce energy use. Aggregates operations are very low contributors to greenhouse gas (GHGs) emissions in the U.S. NSSGA members use the GHG emissions calculator to track and work to reduce their energy use and emissions. Even so, the aggregates industry has undertaken many greenhouse gas mitigation efforts, such as investing heavily in fuel-efficient mobile equipment and improving operational efficiency.



As most of the emissions associated with aggregates come from the transportation of material. NSSGA supports policies that promote local sourcing of aggregates, which results in lower greenhouse gas emissions. Aggregates are an important tool in creating resilient infrastructure to combat climate change, with uses such as flood control and water treatment.

Aggregates facilities are heavily regulated before, during and after operation at the local, state and federal level. NSSGA members support reasonable regulations based upon the law and sound science that allow the timely extraction of materials vital for infrastructure projects, but object to those that are redundant, burdensome and do not provide environmental improvement.

We recognize the challenge that lies ahead and we strongly encourage EPA to consider a focused-collaborative approach that includes additional stakeholder outreach and input opportunities while developing and implementing the program. Also prioritizing funding and resources on creating a strong foundation through supporting following:

- a. *Improving public background data.* Public background data are essential for transparency and public trust in public decision making. Yet the Federal LCA Commons can play a strong role in providing, maintaining, and updating datasets, both funding and resources are needed.
- b. *Improving standardization and encouraging harmonization.* Assuring the quality of PCRs will ensure that EPD results can reliably inform decision-making. As a result, technical frameworks that support industry wide protocols for developing high quality product category rules (PCRs), such as the ACLCA PCR Open Standard, is needed. Designating the use and supporting efforts to promote its implementation and continuous improvement are essential.
- c. *Encouraging education* – Many educational materials, opportunities, and even certification programs already exist through resources provided by government agencies such as FHWA as well as associations ACLCA, NAPA, NRMCA, NSSGA, etc. Until recently, these opportunities were under-utilized due to competing priorities. EPA should encourage the use of existing materials rather than using resources to develop and deliver new.

**1. Newly Manufactured Materials:** How should EPA prioritize construction materials and products to focus on for its EPD assistance program? How should EPA prioritize construction materials and products for its carbon labeling program? Please provide a justification for each of the construction materials/products proposed. For context, Federal Buy Clean efforts have initially focused on concrete (and cement), glass (including, but not limited to, flat/float glass, processed glass, and insulated glazing units), asphalt mix and steel (including, but not limited to, hot rolled sections, plate, hollow structural sections, steel reinforcing bars/rebar, cold formed steel framing and steel joists). This focus is due to the high embodied (manufacturing) greenhouse gas intensity, availability of data and reporting frameworks (such as EPDs) and percentage of federal expenditure on these materials/products. The General Services Administration (GSA) issued an RFI in October 2022 that identified aluminum (including curtain

walls and storefronts), insulation (including enclosure, equipment, piping, and acoustical), roofing materials, and gypsum board as the second tier of priority and structural engineered wood (including mass timber and cross-laminated timber) as the third tier of priority.

With limited funding and resources, EPA cannot focus on all materials and should focus on creating a strong foundation that is tested with a limited number of key product materials and is scalable. Focus should be given to materials identified in the statute or are materials common to vertical and horizontal construction activities and purchased in large quantities to support the FHWA and GSA grant programs.

Lastly, with the push of supply chain specific EPDs, EPA should also consider upstream material ingredients of these materials (ie, agencies may purchase large quantities of asphalt or concrete; Upstream materials included in these mixtures are cement, asphalt binder, aggregate, and additives).

Setting up a low embodied procurement program based on EPDs will be challenging and a major change for industry and governmental agencies. Evidence of this challenge can be seen through California's experiences which begun in 2017. EPA should avoid the errors California made in its efforts.

**2. Minimally Processed, Salvaged and Reused Materials:** How might EPA's programs incentivize, measure, and standardize the salvage and reuse of building/infrastructure materials as a key part of the Federal embodied greenhouse gas reduction strategy given the current lack of labels or EPDs and other challenges for some of these materials? What salvaged and reused materials should be prioritized and why?

EPA should define salvaged and reused materials as definitions make a difference in how industry views these materials. For the aggregates industry, we look at our products in our PCR as co-products and by-products. Co-products are usually planned, desirable outputs from the manufacturing process, they can also be used as ingredients in other production processes. (Co-Products can/will receive an allocation.)

By-products are materials of value that are produced as a residual of, or incidental to, the production process. By-products can be recycled, sold as is, or used for other purposes. (By-products / waste do not receive an allocation. If they are recycled they will receive the GWP generated from the recycling process.)

After defining, EPA should work with industry to create product specific rules for salvaged and reused materials in material categories where reuse is possible. EPA should also consider up-cycling of by-products. In particular, by-products are generally available on the production sites and are more uniform thus requiring less energy and emissions for hauling and processing compared to recycling. For some material

categories, PCRs can be created for salvaged and reused materials while for others this may be challenging.

**3. Biobased Materials:** How might EPA's programs incentivize biobased construction materials (e.g., mass timber, straw, hemp, cellulose cement), given the captured greenhouse gas emission advantages of some of these materials, while also ensuring sustainable forestry and agricultural practices (which may not be fully included in life cycle assessments (LCAs)) are considered as part of EPD assistance and carbon labeling, where relevant? Similarly, how might EPA measure impacts associated with the feedstock for biobased materials potentially displacing crops that might otherwise be used for food or biofuel? What are the opportunities to use agricultural waste in construction materials to substantially lower the embodied greenhouse gas emissions?

Current biogenic carbon accounting principles need to be developed and standardized to be included in EPDs. To support proper use of these materials, EPA could support development and standardization of methods to account for biogenic carbon. These methods could be incorporated into the ACLCA PCR Open Standard Addenda on Biogenic Carbon Accounting.

**5. Public Accessibility of Data:** What role can EPA play to support greater public access to product and facility specific environmental data? What background datasets need to be generated, made publicly accessible, and/or updated and enhanced to reflect embodied greenhouse gas emissions of the final product more accurately? What role should the Federal LCA Commons (<https://www.lcacommons.gov/>) have, if any?

From research conducted at FHWA, public background data are essential for transparency and public trust in the decisions being made. The EPA can facilitate greater public access to the Federal LCA Commons background data by designating the use of public background datasets in PCRs/EPDs intended for use in green public procurement program by requiring the procurement use case of the 2022 ACLCA PCR Open Standard<sup>1</sup>. This eliminates artificial distortions when comparing EPDs in same product categories.

Any background datasets required must be freely available and public and allow adequate time for respective PCRs and EPDs to be updated to not overly burden producers. This will require that public data is updated, maintained, and curated; a need for which the Federal LCA Commons could play an important role.

Important background datasets that should be included are unit process datasets such

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<sup>1</sup> Bhat, C.G., Adhikari T, Mellentine J, Feraldi R, Lasso A, Swack T, Mukherjee A, Dylla H, Rangelov M. 2022 ACLCA PCR Guidance – Process and Methods Toolkit. Version May 2022. American Centre for Life Cycle Assessment; see: <https://aclca.org/pcr/>

as, electricity (at least at balancing authority scale if not at utility scale and eventually including residuals), transport (road, rail, water, pipelines, air), and fuels (coal, natural gas, biofuels, hydrogen, oil) and energy (wind, solar, geothermal, hydropower, nuclear).

Additional datasets that are commonly needed amongst product categories are: infrastructural aspects (e.g., water and wastewater treatment processes, heating, and cooling processes) and end-of-life and recycling processes at least at national scale, if not regional.

The Federal LCA Commons can play a strong role in providing, maintaining, and updating datasets for the identified background datasets with the support of allocated funds from both the EPA Inflation Reduction Act sections and DOE Omnibus Spending Act section. These datasets will need to pass through central Federal LCA Commons central curation (role yet to be developed as it would need dedicated resources) to ensure interoperability with other Federal LCA Commons repositories.

Providing funding (non-duplicative of Omnibus Spending allocated to build out background datasets) to support a working group that will designate the format, content (identified via gap analysis), and verification process as well as consensus building on the use of key background datasets for broader harmonization among program operators, industry representatives, public agencies, and third-party LCI/LCA data providers is needed. The desired outcome is a commitment and plan for how to phase in public background data to LCA's underlying EPDs intended for green public procurement programs (e.g., as an update to the ACLCA 2022 PCR Open Standard).

**6. Moving More EPDs From Averages Towards Actuals:** How can EPA support the development of product-specific EPDs that use more actual, facility-specific data for greenhouse gas emissions along a product's "upstream" supply chain? What type of/approach to verification is needed to ensure reported data is accurate?

EPA should require that EPDs be created from PCRs that are conformant with the ACLCA 2022 PCR Open Standard, 'Procurement' use case level. There are criteria in the PCR Committee checklist (part of the Program Operator (PO) checklist Version 1.0, May 25, 2022) that addresses the use of supply-specific data (See PCR Committee checklist: Life cycle inventory, Foreground/primary data: 24, 25, 26). Furthermore, ACLCA's PCR Committee is developing taxonomy defining different types of EPDs based on the specificity of the EPDs. Adoption of the ACLCA 2022 PCR Open

Standard addresses the verification question as well by reviewers using the PCR Review Panel checklist.

One important constraint is the cost of developing individual EPDs, which may be lowered by streamlining the PCR and EPD procedures per the ACLCA 2022 PCR Open Standard. EPD generator tools may also help improve efficiency of supply chain specific EPDs and therefore reduce costs compared to development of individual product EPDs. *The NSSGA is in the process of developing an EPD tool for use among our aggregate producer members and though it focuses on industry averages, companies can choose to pay for their individual EPD for a specific location. Streamlining would lower these costs for our members. Caution is that industry average EPDs will have tendency to have more variability than site specific or product specific EPDs.*

**7. Life Cycle Stages:** How should EPA consider the environmental impacts/contributions of the use and disposal stages of materials/products when those stages are not often addressed in EPDs and depend heavily on decisions by future owners of the materials/products?

An EPD is intended to be a snapshot in a product's life cycle, not the entire life cycle. Aggregates producers specifically do not know where their products go once they leave the gate, what they are used for/in, or how they get there. Including additional life cycle stages in an aggregate EPD would be extremely difficult and more or less a guessing game.

There is no consensus around requirements for EPDs to include use and end of life stages. For that reason, ACLCA's 2022 PCR Open Standard does not make specific recommendations other than ensuring there is clear documentation provided for stages when reported.

**8. Improving Background Datasets:** EPDs rely on background datasets in cases where primary data is not available. What is the best way to ensure the quality of these datasets (maintenance, assurance processes, etc.)? What types of uncertainty data should be reported in an EPD and how should this data be used in benchmarking?

EPA IRA Program Implementation technical experts can support maintenance of public background data by coordinating with the Federal

LCA Commons community of practice and Program Operators to ensure data gaps and needs are identified and communicated amongst both background and foreground data developers, respectively.

EPA can play a support role for facilitating the verification of background datasets from the Federal LCA Commons. Implementation might include utilizing a tiered phase-in approach for data quality conventions, e.g., via assessment by the enhanced EPA Data Quality Pedigree Matrix (per guidance from Mukherjee & Bhat 2022 in an addendum to the ACLCA 2022 PCR Open Standard) – process level indicators, followed by exchange-level indicators, and finally, the enhanced data quality indicators as recommended by FHWA.

The Federal LCA Commons data are currently a mix of linked and disparate data, and thus, will require a central data curator going forward to ensure interoperability between both federally developed public background data and any data submitted by industry to the USLCI Database platform (e.g., industry averages or LCI/LCIA or EPDs submitted as data source per the criteria specified in the ACLCA 2022 PCR Open Standard).

EPA can support EPD developers and users to avoid convolution of uncertainty factors post-EPD by supporting the standardization of uncertainty fields and digitization (machine-readability) of these PCRs, associated LCAs (pre-EPD), and EPD results (post-EPD).

Further, EPA can support the creation of guidance for consistent specification of background data and other high-quality datasets in PCRs. EPA can support the development and use of the ACLCA 2022 PCR Open Standard addenda to provide guidance on harmonizing background data from various platforms in tandem with consistent collection of foreground data (e.g., creating digital templates offering multiple choices for indicating data types such as individual, plant, historical, modeled, encountered, or judgmental; energy data collection methods such as utility records, equipment ratings, direct measurement/monitoring/sensing, engineering estimates; types of uncertainty distributions such as none, logarithmic normal, normal, triangle, uniform; etc.) to create 'same shape' data.

#### **9. Whole Building Life Cycle Assessment (WBLCA) and similar whole project approaches:**

WBLCA may be able to inform low greenhouse gas emission design and the selection of substantially lower embodied emissions materials and products.

Should EPA consider WBLCA and similar whole project approaches in EPD development and labeling of substantially lower embodied greenhouse gas emission materials/products, and if so, how?

Understanding the design/procurement decision process is important to advise this question. WBLCA is used in design to understand impacts and inform design decisions and where the greatest reductions can be achieved. Typically, this is done prior to procurement. When EPDs are used in procurement, the design decisions about what materials to use have already been made.

We recognize the importance of WBLCA and the role EPDs can play in improving LCA datasets. The more EPDs collected, more specific averages can be created to improve on the average/generic datasets that are used in WBLCA. This can be done by ensuring EPDs are created using the Data Source criteria, the most rigorous level of EPD use case in the ACLCA 2022 PCR Open Standard.

The direct incorporation of WBLCA concepts into a procurement low embodied carbon materials framework is challenging and brings many limitations. To the extent EPA undertake consideration of WBLCA, it should approach its use not on materials individually, but rather on a whole project carbon “budget” from which the contractor can make materials choices.

**10. Other Environmental Impacts:** Existing PCRs/EPDs cover additional environmental impacts categories related to air and water quality, resource depletion and human and ecological health. To what extent should EPA’s efforts on EPDs consider/address these other impact categories? Are there concurrent data/model improvements needed to improve the characterization/quantification of other impacts for the purposes of improving the quality of EPDs?

We recommend EPA keeps the list of designated environmental impact categories for PCRs/EPDs intended for green public procurement to **those designated as mandatory in the ISO 21930:2017 core PCR for building products**. This **does not** include human- and eco-toxicity midpoint type indicators, whose causality chain models are currently associated with high levels of uncertainty. Introducing these midpoint categories into designated PCRs/EPDs intended for green procurement would present complications in ensuring comparability between results and concern over the validity of the underlying data.

**11. Other input** on data accessibility and improvement approaches that EPA should consider?

The hosting and management of the Federal LCA Commons is critical to ensure accessibility of transparent and auditable LCI/LCIA public background data. Outreach with stakeholders using the data is important to ensure data accessibility, consistency, and completeness.

**C. What PCR and EPD standardization, measurement, verification, and reporting approaches for use in procurement decision-making should EPA consider?**

**12. Standardizing and Verifying Product Category Rules:** How might EPA grants/cooperative agreements improve and harmonize Product Category Rules (PCRs) and support the development of a conformity assessment/verification program for PCRs?

EPA should recommend EPDs meet the “Procurement” use case level of the ACLCA 2022 PCR Open Standard with the long-term goal to have EPDs with the Data Source criteria, the most rigorous use case in the ACLCA Open Standard which encourages broader harmonization.

To ensure further standardization and consistency, these grants should be allocated to industry groups that develop the PCR documents. This will lead to more frequent updates and collection of more aggregate data to continue updating aggregate baseline LCAs.

Recognizing that the ACLCA 2022 PCR Open Standard was recently published, EPA must have a phased in approach. Industry group funding could be used to support training, outreach on the standard, and improvements such as incorporating EPA's conformity assessment for future standard updates and development of addenda that address uncertainty, EPDs using ISO 21930 as a core PCR, and other topics as needed. EPA's grants and cooperative agreements can and should build the critical partnerships with industry groups to advance assessments and verification programs.

**13. Standardizing EPDs:** How might EPA grants/cooperative agreements improve and harmonize EPDs so as to provide comparable results and meet other needs?

The comparability of EPDs is a function of the pertinent Product Category Rules. EPA could require that recipients of grants supporting PCR/EPD development adopt the

ACLCA 2022 PCR Open Standard conformant with the Procurement level.

A long-term goal should be to have EPDs with the Data Source criteria, the most rigorous use case in the ACLCA Open Standard which encourages broader harmonization. Grants and cooperative agreements with industry groups can advance this goal, as well as facilitate EPA/Industry collaboration aimed at increased harmonization.

**14. Verifying EPDs:** When an EPD is verified by a third-party, what requirements should that verifier/Conformity Assessment Bodies (CABs) meet, or accreditations should that CAB must ensure credibility? Does the ISO 14025 verification scope and verifier competencies sufficiently satisfy expectations for third-party verification of an EPD used for public procurement? How should EPA support better verification practices?

The ISO 14025 includes criteria on third party review of the PCR and LCA/EPDs. To demonstrate competency in LCA or the review process, EPA should encourage the use of ACLCA's certification programs. Certifications currently exist for LCA Professionals (practitioners) and Reviewers. Certifications must be renewed every three years and require continuing education hours. ACLCA is also in the process of obtaining a Classification of Instructional Programs (CIP) number for the profession.

This is critical for the future of the field as it will not only mark LCA practitioners as an occupation but also set the skills and knowledge required for LCA practitioners and is the first step towards creating a licensing program for the profession if necessary.

**15. Digitizing EPDs:** What are issues to consider when transitioning to machine-readable reporting? How can EPA help advance digitization of EPDs for both producers and users of the data? What parameters should EPA be considering when establishing criteria for digitizing EPDs (e.g., interoperability, data security)?

The Federal Highway Administration (FHWA) is currently pursuing digital construction initiatives within the Every Day Counts (EDC) program. Discussions on future integration of EPDs into some of the existing platforms has already started. EPA should collaborate with the FHWA EDC program and take advantage of many years of work and research put into developing platforms for digital construction.

**16. PCR and EPD Repositories/Data Platforms:** How might EPA grants/cooperative agreements help foster the development of national and/or international PCR and EPD repositories? What existing platforms have the greatest potential to support the goals of IRA Sections 60112 and 60116? What additional functionality and features are needed?

The ACLCA has developed and maintains a PCR repository platform:  
<https://aclca.org/pcr-search/> and EPA could promote or otherwise utilize this existing

platform and potentially support the expansion to an EPD repository.

**17. Unique Approaches Needed for Salvage and Reuse:** What barriers and solutions exist for materials reuse, and what potential opportunities/solutions should EPA support as part of the EPD technical assistance and/or labeling program? Should PCRs and EPDs be developed for salvaged and reused materials/products like salvaged steel beams, wood flooring, bricks, etc? Should existing PCRs be modified to address these materials/products? How should EPA support other standardized approaches for salvaged materials?

Defining new salvaged materials is important as reuse and recycled are usually how products are referenced. Some products can go from waste to recycled to a product and figuring out who gets credit for the product is complicated.

The EPD for aggregates already provides for additional environmental information inclusion, where relevant, separated from the information described in ISO 21930:2007, Sections 7.2.2 and 7.2.3., such as

- Preferred waste management option for used building products; and
- Potential for incidents that can have impact(s) on the environment, such as:
  - the end-of-life stage, from deconstruction, reuse, demolition, recycling and disposal;
  - energy, water-saving, etc. and other improvements, such as acoustical improvements;
  - energy content of the building product for energy recovery in the end of life;
  - recycled content (see ISO 14021:1999) or recycling rates.

**19. Manufacturer Needs:** What types of incentives and/or financial and technical support would help construction material and product manufacturers, including small businesses, to develop high quality, digital/machine-readable, third-party verified EPDs for the materials and products they produce?

Many educational materials, opportunities, and even certification programs already exist through resources provided by government agencies such as FHWA as well as associations ACLCA, NAPA, NRMCA, NSSGA, etc. Until recently, these opportunities were under-utilized due to competing priorities. EPA should encourage the use of existing materials rather than using resources to develop and deliver new.

Financial support of industry groups such as NSSGA, NAPA, ACLCA, and NRMCA can advance Training, education, tech transfer, development of tools to collect real-time and aggregate data, development tools to produce EPDs.

- 20. Fair, Equitable Distribution of Resources:** How should EPA shape grant programs providing technical assistance or funding for developing EPDs to reach a wide array of entities and to ensure equitable, fair distribution of resources?

In determining how to shape of grant programs and funding to develop EPDs, EPA should focus on construction supply chains and materials highly consequential and essential to the construction industry, and take into account the non-federal funding certain industries have directed towards EPD development. It is not particularly “equitable” to award funding only to those entities that have made no investment of their own in EPD development. EPA should strongly consider matching private funds as a metric as well as cooperative agreements with industry groups for future awards.

**E. What should be considered for setting thresholds for “substantially lower levels” of embodied greenhouse gas emissions for qualifying materials/products under a labeling program? Note: Per IRA Sections 60503 and 60506, EPA provided GSA and the Federal Highway Administration (FHWA) an interim determination on materials/products with substantially lower embodied greenhouse gas emissions.**

**23. Performance Characteristics and Other Variables:** For each of the four initially prioritized construction materials/products (concrete, asphalt, steel, and flat glass) what performance characteristics and other variables (e.g., strength class, recycled content) that can impact the product’s embodied greenhouse gas emissions should EPA consider when developing or selecting criteria for the labeling program? Are there private sector standards/ecolabels that EPA should consider?

EPA should consider performance characteristics and other factors that could affect the embodied carbon of a product, where appropriate. Where high specifications related to safety performance are at issue, EPA should consider the importance of the safety performance specification in weighing the associated GHG value.


**24. GWP Threshold/Criteria Development and Update Approach:** What approaches should EPA use to create market certainty and maximize consistency of definitions of substantially lower levels of embodied greenhouse gas emissions? What role should private sector standards play? How can regional differences be appropriately considered in development of thresholds?

The transportation emissions of aggregates is a considerable factor in an aggregate EPD. The distance of one source of aggregate to a location versus another can affect the relative EPD values based on geographic factors and transportation options available to the aggregate shipper. A national, one-size fits all metric for the transportation related emissions for aggregates is not possible. EPA must use regional and sub-regional transportation metrics to create reliable marketplace consistency.

**25. Role of Private Sector Labels:** What role(s) could private sector ecolabels play? How could EPA work to ensure consistency of approaches between ecolabels addressing different construction materials?

Private sector labels should be discouraged and considering other environmental impacts goes beyond statute which focuses on embodied carbon. EPA should use EPDs as the basis for the low carbon materials program and may need to consider a flexible approach as data gaps may be fulfilled and our knowledge emerges over time.

Sincerely,

A handwritten signature in black ink, appearing to read "Michele Stanley". The signature is fluid and cursive, with the first name "Michele" being more prominent than the last name "Stanley".

Michele Stanley  
Vice President  
Government and Regulatory Affairs  
National Stone, Sand, and Gravel Association