U.S. General Services Administration

Update on GSA's "Buy Clean" Embodied Carbon Initiatives

2023 ACEE Embodied Carbon Market Transformation

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Roadmap

1. GSA’s 2022 **concrete and asphalt standards**

2. **Federal Buy Clean** initiative

1. **Inflation Reduction Act**

2. **Whole-building** embodied carbon reduction

1. GSA's 2022 Concrete & Asphalt Standards

(P100 Facilities Standards § 4.8.5)

- Since March 2022 GSA's concrete and asphalt standards **have been applied on GSA projects**, and have been incorporated into our scope of work templates and P100 Facilities Standards.
  - Seven asphalt projects, and one concrete project have complied to date. (These include both Bipartisan Infrastructure Law projects at land ports of entry, and work at Federal buildings and U.S. Courthouses.)
- So far the projects to implement these standards were able to do so with **little to no additional cost**.
  - At least one had an asphalt supplier develop its first-ever environmental product declaration (EPD) in just five weeks per GSA's request, without any impact to the project's cost, scope, or budget.
- P100 waiver may be granted if material with EPD is unavailable.
  - GSA will first ask our suppliers, and remind them that **developing an EPD can be a sound business decision, due to the growth of Buy Clean programs, appropriations, and green building certification system credits that require EPDs.**)
  - GSA only grants a waiver if a **global warming potential estimate** is provided, in lieu of an EPD.

2. Federal Buy Clean Initiative

Leverages Federal procurement and funding to catalyze markets for low-carbon construction materials and upgrade our transportation, buildings and energy infrastructure

- As the **world's largest buyer of goods and services**, the Federal government's supply chain emissions are twice as large as emissions from Federal buildings and vehicles.
- The **U.S. manufacturing sector** produces the materials that are critical to rebuilding and strengthening the nation's infrastructure.
- U.S. manufacturing sector is linked to nearly **a third of U.S. greenhouse emissions** from industrial processes.
- Buy Clean Federal efforts aim to build upon and accelerate **existing Buy Clean efforts** led by cities and states with critical support from industry, labor and environmental groups.
- A White House-led **Buy Clean Task Force** is coordinating interagency efforts to send the **first Federal demand signal** for lower embodied-carbon construction materials – **steel, concrete (and cement), asphalt and glass** – that are made in America with union jobs.

www.sustainability.gov/buyclean

3. Inflation Reduction Act (IRA)

- IRA appropriated $3.375B to GSA, and $2B to the Federal Highway Administration (FHWA).
  - $2.15B of GSA's IRA funding (and all FHWA's IRA funding) is for **construction materials with "substantially lower levels of embodied greenhouse gas emissions"** as determined by EPA;
  - $975M for "**emerging and sustainable technologies**, and related sustainability and environmental programs"; and
  - $250M for "measures necessary to convert [GSA] facilities to **high-performance green buildings**"

- As EPA explained, they **determined eligible materials**, and defined *substantially lower* embodied carbon

- GSA IRA Vision: Successfully deploy low embodied carbon materials and emerging sustainable technologies to strategically **transition the Federal portfolio to net zero emissions**.

- GSA IRA Objectives:
  - Reduce Harmful **Emissions**
  - Create Good-Paying **Jobs**
  - Catalyze American **Innovation**
  - Improve **Efficiency** And Reduce Long-Term Costs

- gsa.gov/ira

The Road to GSA's IRA Low Carbon Implementation

- Per to EPA's Interim Determination, GSA set global warming potential (GWP) limits "using **data from a verified source** (e.g., an open source EPD database, industry-wide EPDs or a 3rd party-verified LCA developed using the relevant PCR)."
- GSA's limits are based on **publicly-available industry average and product-specific EPDs**, filtered by material type, PCR(s) specified in GSA's Requirements, North American geographical scope, and validity dates of 1/1/2022 or later.
- GSA's IRA requirements leveraged **industry feedback** and our experience with 2022 concrete and asphalt standards.

Comparison of GSA's 2022 concrete standards for all projects vs. 2023 Interim IRA Low-Carbon Material Requirements

Specified compressive strength (f'c in PSI)	Maximum Global Warming Potential Limits for GSA Low Embodied Carbon Concrete (kilograms of carbon dioxide equivalent per cubic meter - CO_2e kg/m³) Standard Mix
up to 2499	242
2500-3499	306
3500-4499	346
4500-5499	385
5500-6499	404
6500 and up	414

These numbers reflect a 20% reduction from GWP (CO_2e) limits in proposed code language: "Lifecycle GHG Impacts in Building Codes" by the New Buildings Institute, January 2022.

Specified concrete strength class (compressive strength [f'c] in pounds per square inch [PSI])	GSA IRA Limits for Low Embodied Carbon Concrete - May 16, 2023 (EPD-Reported GWPs, in kilograms of carbon dioxide equivalent per cubic meter - kgCO_2e/ m³) Top 20% Limit	Top 40% Limit	Better Than Average Limit
≤2499	228	261	277
3000	257	291	318
4000	284	326	352
5000	305	357	382
6000	319	374	407
≥7200	321	362	402

Add 30% to these numbers for GWP limits where high early strength[1] concrete mixes are required for technical reasons.

Strengthened from middle-of-the road to "substantially lower" levels of embodied GHG emissions.

Implementation Update on GSA's Inflation Reduction Act Low Embodied Carbon Appropriations (IRA Section 60503)

- We are piloting our more aggressive IRA-specific requirements at 11 projects over a six-month pilot period.
  - Projects were selected based on their ability to immediately integrate, and benefit from, substantial amounts of materials of the types that are initially eligible for our $2.125B of IRA low embodied carbon funding.
  - We will **learn from the pilots, gather data, and continue to coordinate with industry** and other agencies on GSA's post-IRA approach.

- In accordance with guidelines on IRA implementation for GSA and the FHWA (from EPA's Interim Determination), our **IRA money may only be used for materials with *substantially* lower levels of embodied carbon**. This means the **best (lowest) 20% in terms of global warming potential** where available, compared to similar products, otherwise best 40%. Worst-case scenario, the emissions must be lower than average. There is **no waiver process for IRA funding**.
  - Based on market research to date, we hope to help **grow the market for lower-carbon building materials that meet project teams' needs**.

- These material-specific requirements complement our **whole-building life cycle assessment (WBLCA) performance measure**. It is designed to ensure that we are not only choosing better "like for like" material selections, but also taking a **holistic approach** at design decisions that can use less material, or different types of materials, to achieve the best result on a whole-building life cycle basis.

4. Whole Building Life Cycle Assessment Approach for Large Projects
P100 § 1.9.2.9

GSA's Whole-Building Embodied Carbon Reduction measure requires our new construction and major modernization to:

1. **Target a 20% reduction in the project's whole-building embodied carbon from materials,** compared to an equivalent conventional building project, using a GSA-approved estimation tool; and

2. Earn at least one **Building Life-Cycle Impact Reduction** **LEED BD+C: New Construction point**, using *whole-building life-cycle assessment* to conduct cradle-to-grave life-cycle assessment of structure and enclosure.

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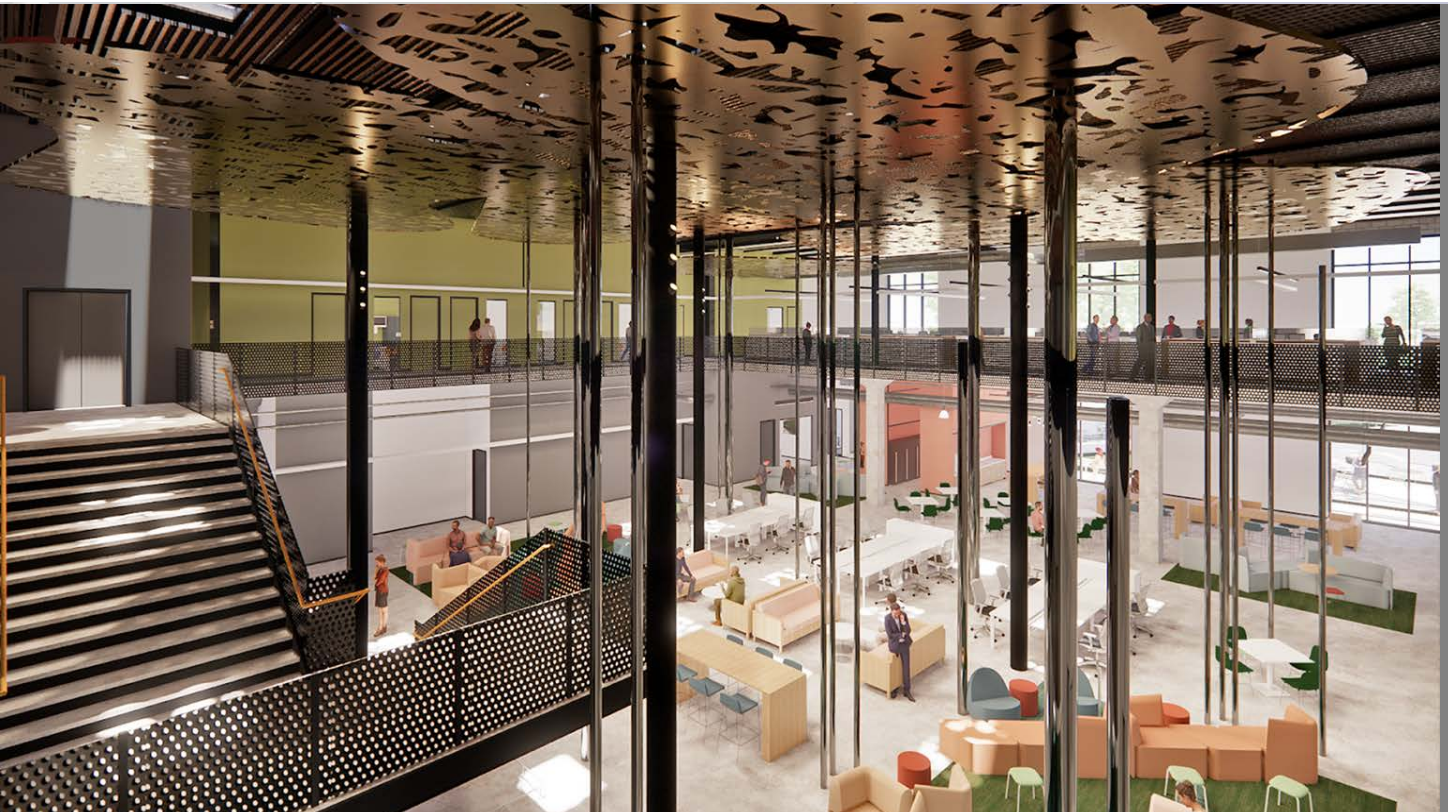

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