

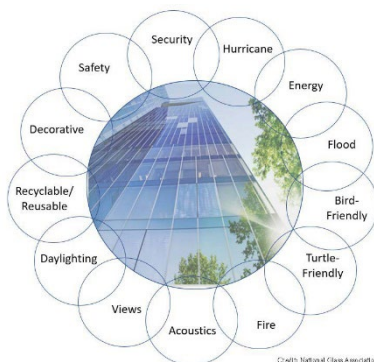
Mr. Walter Tersch  
Mr. Don Horn  
Mr. Brad Nies  
Ms. Rebecca Stevens

RE: NGA's comment to GSA Inflation Reduction Act Low Embodied Carbon Material Standards

February 9, 2023

On behalf of the National Glass Association, we thank you for the opportunity to comment on the draft GSA Inflation Reduction Act Low Embodied Carbon Material Standards (GSA LEC Standard) and to provide further education about the complexities of the glazing industry supply chain.

NGA has more than 1,700 member companies from across North America and around the globe, covering the entire supply chain of the glazing and glass building products industry from the primary glass manufacturers, glass and metal fabricators, insulating glass manufacturers, fabricators/manufacturers of completed glass products and systems, spacer and other component suppliers, window and door dealers, to the final retail glass businesses and installers/contract glaziers. Our vision statement is: "We envision a future in which glass is the material of choice to enhance spaces where people live, play, learn, work and heal." GSA's Sustainable Vision is to: "Provide an optimal synergy of cost, environmental, societal and human benefits while meeting the mission and function of the intended facility or infrastructure".



Glass is a unique building product that offers many functions to both the building and its occupants. GSA's P100 Facilities Standard for the Public Buildings Service needs glass to not only have a low carbon footprint or low GWP (embodied carbon), but to also provide many of the functions shown in the diagram. With the proposed GSA LEC Standard focusing on GWP from the EC3 calculator, there is a risk that GSA will inadvertently choose the wrong glass for its buildings.

There are several important points we would like to make regarding the draft GSA IRA Limits for Glass and Glazing Assemblies (page 8).

### 1) Categories and Processed Glass

The currently proposed categories are Flat Glass, Processed Glass, and Insulated Glass Units.

- First, *insulating* (not "insulated") glass units are a subcategory of processed glass and should not be treated as a separate category once the units are corrected (see below).

More importantly, the **processed glass and insulating glass unit lines should be removed** until such time as there are sufficient EPDs in the market for the wide range of processed glass. This is currently an impossible task considering the infinite combinations of annealed glass, heat strengthened glass, tempered glass, safety tempered glass, laminated glass with different thicknesses and interlayers, coated glass with hundreds of different coating products, fire-rated glazing, ballistic / blast resistant / security glass with different configurations, bird-friendly glass, acoustic glass, patterned / fritted / etched glass, decorative glass, dynamic glass, vacuum insulating glass, and IGU configurations with different numbers of panes, glass types, glass thicknesses, spacers, sealants, and desiccants. See attached “NGA Glass Technical Paper Describing Architectural Glass” to see some of the complexities of processed glass.

- EPDs for this infinite range of processed glass and glazing assemblies do not exist currently. Moreover, EPA and GSA are requiring EPDs based on an active PCR. The North American processed glass PCR has technically expired, and while the program administrator has granted a temporary extension, there is no guarantee when the PCR will be reactivated or with what changes. This could severely limit the ability of new processed glass products to get EPDs.

We understand there is an effort and potential funding to create an online EPD generator that would take primary input data to quickly create EPDs for all these variations in a fast and cost-effective manner. We *support* that effort, however the processed glass and insulating glass unit lines should be removed from the draft GSA IRA Limits until such time as that EPD generator has been developed and thoroughly vetted.

Regarding the technical intent of the GSA limits to encourage materials with lower embodied carbon, the large majority of embodied carbon in processed glass and glazing assemblies is from the primary flat glass (approximately 70% to > 95% depending on the specific processed glass product). As such, it would satisfy the intent of the IRA, GSA, and EPA to only apply the Flat Glass limits with the knowledge that it also addresses selection of processed glass and insulating glass units with lower embodied carbon, as specified in the EPA interim determination.

- We recommend that two important changes must be made:
  1. Similar to the general Coverage statement and the Cement page, a line should be added to the Glass and Glazing Assemblies page regarding assemblies:

“Construction product assemblies can also qualify for IRA funding where at least 80% of the processed glass or glazing assembly’s total cost or total weight comprises IRA-qualifying material such as low embodied carbon flat glass.”

It should be noted that the regulated ‘assembly’ in this case is related to processed glass and insulating glass units, not full window assemblies that include framing and other components, so the wording above refers to the processed glass or glazing assembly.

This would allow the appropriate flat glass EPD to be submitted where processed glass and glazing assemblies are not available.
  2. *If* the processed glass limits are retained (which we recommend removing), the unit for processed glass and glazing unit limits must be corrected from square meters (m<sup>2</sup>) to a mass basis (ton, kg, or lb). This is a severe technical error that must be corrected. We understand

that the processed glass PCR does use a square meter as the declared unit, but it allows the manufacturer to specify the appropriate thickness for the product. While that is appropriate for EPD disclosure and transparency, it does not work for comparing across different types of products, such as with the broad category of processed glass. What thickness was assumed in setting the GSA IRA limits – 6 mm, 4 mm, or something else?

Here are some examples of the problems this creates where the actual required assembly is different than the assumed thickness, and applying a GWP limit based on a square meter basis would be inappropriate:

- Blast resistant and fire-rated glazing is often required in GSA buildings, and the glazing assembly is much thicker to have the required life-safety performance.
- Higher wind load applications require thicker glass per the building code than the assumed thickness.
- Triple glazing with greater overall thickness would be discouraged as compared to double glazing, despite the potential positive impact on the building's energy performance and operational carbon emissions.
- If using a square meter basis, Company A might sell all its different thickness glass products under one EPD using a 6 mm declared unit, whereas Company B might sell all its glass products using a 3 mm declared unit. On a square meter basis, the GWP of Company B would look half as large as Company A, when they are essentially the same.

However, these problems of unequal product comparison by not using a mass basis reinforces that the processed glass and insulating glass unit categories should simply be removed and be covered by the flat glass limits. If changes are made rather than removing these categories, the new modified draft standard may need to be subject to a new comment period to comport with fundamental notions of due process.

## 2) Facility-Specific Requirements

Because of the unique aspects of the flat glass industry, **we strongly advise that the requirement for facility-specific EPDs be removed for flat glass.** The flat glass industry in the U.S. consists of a small number of large manufacturers who then supply the diverse chain of fabricators that make processed glass and glazing assemblies. Each flat glass manufacturer has several float plant facilities, at which different products (regular clear, low-iron clear, tints, coated, specialty) are made. Some plants may manufacture many products; others may be dedicated to one. Because of the small number of companies and nature of float plants, revealing facility-specific data (as opposed to overall manufacturer data) will reveal proprietary information that can be used by competitors to gather information about specific products. This raises very real proprietary, anticompetitive, and antitrust concerns.

Even if these competitive and legal concerns can be overcome, they will still lead to practical concerns and confusion in the building design and procurement process. Design teams are not aware of the nuances of the complex glazing industry supply chain and will understandably be confused and frustrated about specifying products. They will not understand why they can use product A because it is

made here, but not product B because it is made at a facility that does not make that coating or substrate – even if they are both from the same company.

We would also point out that even the EPA interim determination says that “When an EPD with facility-specific data is not available, for this interim determination, EPDs consistent with (i) and (ii) but not using facility-specific data are sufficient.” Therefore, if a manufacturer does not have a facility-specific EPD available, they can submit their main EPD as long as it is under an active PCR and complies with ISO 14025 and ISO 21930. This should be clarified in the GSA draft standard, and the requirement for facility-specific flat glass EPDs be removed. Please see [NGA’s FAQ](#) on the concerns on facility specific data.

### **3) ENERGY STAR Plant Scores**

We are concerned about the requirement that the ENERGY STAR Energy Performance Score for the specific supplying flat/float glass plant be provided. We understand that only the score is publicly disclosed, not any proprietary data, but there are still several concerns.

In the online database, there are only two float plants listed from 2020, neither of which have facility-specific EPDs, and no currently certified float plants. This is in part because of the burden to certify. The certification process takes a fair amount of resources and must be done separately to recertify for each year. This seems excessive, in that if a plant is performing in the top quartile one year, it is not automatically going to become inefficient the next.

Furthermore, we don’t believe the ENERGY STAR requirement provides GSA any useful additional information in regards to the procurement of low embodied carbon materials. In response to a question about ENERGY STAR on the GSA webinar, GSA replied that “the Energy Star score is only required for disclosure. No minimum score of energy threshold is required; only the GWP thresholds.” It then begs the question of why it would be required if GSA is already getting what they need for GWP from the EPD and the CO<sub>2</sub>e limits. While voluntary participation in the ENERGY STAR Plants program is good, required participation is an unnecessary burden when it is not providing any additional information necessary for the IRA procurement.

### **4) Top 20%, Top 40%, and Average or Better Limits**

We recommend GSA consider revising the tier approach for flat glass so they reflect the EPD data available from the US glass manufacturers. No US glass manufacturer has an EPD that meets the Top 20% Limit of 1,310 kgCO<sub>2</sub>e per metric ton of flat glass. Furthermore, by requiring compliance be determined via “Uncertainty-Adjusted GWPs” using either EC3 or the EPD Uncertainty Worksheet, only two US manufacturers will be eligible under the Top 40% Limit, of which, only one typically supplies flat glass to the commercial segment. This would create an anticompetitive environment in the flat glass supply chain as only one, maybe two, manufacturers will be able to supply this market segment.

### **5) EC3**

- Having been involved on the EC3 calculator working group, it is clear that the same errors that are a part of EC3 are now being transferred into GSA LEC Standard. For example, the difference

between processed glass and “insulated” glass. NGA has tried to correct this erroneous wording several times; however, these discrepancies persist.

- We would like to better understand the uncertainty in the EC3 calculator and the resulting limits being specified in the GSA draft standards. For instance, if the reported GWP values for all flat glass manufacturers are within 6% of each other, and the uncertainty in the EC3 database, proposed limits, and EPDs in general is larger than this, what value is there in selecting one manufacturer over the other on this basis? It seems somewhat artificial and punitive, especially when compared to more significant operational carbon savings from high performance glazing (see below) and higher embodied carbon from non-domestic sources.

## **6) Operational Carbon in addition to Embodied Carbon**

- We recommend that GSA also consider operational carbon in addition to embodied carbon in its procurement process. The use of high-performance fenestration products such as low-e glass, high performance insulating glass units, and/or vacuum insulating glass units will significantly reduce carbon emissions through HVAC and lighting savings in the building. The operational energy and carbon savings over the life of the product greatly outweigh the initial embodied carbon. Said another way, the added embodied carbon of high-performance glazing is usually paid back in months, not years, due to the operational carbon savings. As an example, please look at GSA’s Edith Green Wendell Wyatt retrofit project.

We appreciate the discussions we have had with GSA so far, and we would like to continue that dialogue to find solutions that jointly benefit the public, the glass and glazing industry, and the environment.

Sincerely,



Urmilla Sowell  
NGA Technical and Advocacy Vice-President

Cc: Nicole Harris, NGA President and CEO