NATIONAL GLASS ASSOCIATION with GANA

We envision a future in which glass is the material of choice to enhance spaces where people live, play, learn, work and heal.

July 18, 2025

To: CBHCC by email to CBHCCSecretary-SecretaireCCHCC@nrc-cnrc.gc.ca

Re: CBHCC request for comments on Embodied GHG draft policy position

On behalf of the National Glass Association (NGA), thank you for the opportunity to provide input on the draft CBHCC policy position on addressing embodied greenhouse gas (GHG) emissions for new houses and buildings in the National Model Codes.

NGA has over 1800 member companies from across North America and the globe. Member companies represent the entire supply chain of the glazing and glass building products industry, from primary glass manufacturers, glass and metal fabricators, insulating glass manufacturers, fabricators/manufacturers of completed glass products and systems, spacers, sealants and other component suppliers, window and door dealers, to the final retail glass businesses and installers/contract glaziers.

This is quite early in the process, so these comments are more generalized. We can provide more specific comments about the glass, glazing, and fenestration industry as specific proposals are developed.

Tiered Framework and Priorities

The draft position paper suggests a tiered framework for requirements as well as an initial priority on the structural elements, with the building envelope as a second priority "if practical". We agree with this approach, as the structural elements make up a large portion of total mass and embodied carbon of the building, and environmental product declarations (EPDs) for those materials such as concrete and steel are available.

On the other hand, decisions regarding the building envelope are more complicated and need to consider both embodied and operational carbon impacts from the use of the building. As an example, focusing only on minimizing embodied carbon would give erroneous conclusions like recommending single pane glazing and walls without insulation, which is obviously nonsensical. In cold climates, case studies show that any additional embodied carbon in triple glazing or vacuum insulating glazing (VIG) can be paid back in just months, whereas the operational carbon benefits continue for years. Embodied and operational carbon need to be considered together, especially for high performance products. This is complicated and varies by building type, construction type, and location, so making the envelope a secondary priority for this program after structural elements is appropriate.

EPD availability

For any program to be successful, the appropriate data must be available either in EPDs or other product carbon footprint (PCF) reports. For glass and glazing products, EPDs are available for the *primary flat glass* from more than one primary glass manufacturer.* In contrast, product specific EPDs for *processed glass* and glazing assemblies that are actually installed in buildings are not yet widely available at this time. This is because of the complexity and nearly infinite combinations of annealed glass, heat strengthened glass, 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 insulated glass unit (IGU) configurations with different numbers of panes, glass types, glass thicknesses, spacers, sealants, and desiccants. It will take significant time and cost to develop individual EPDs or an EPD generator tool to cover the wide range of installed products.

Additionally, 75-85% of the environmental impact and embodied carbon is from the primary flat glass, whereas only 10-25% is from later processing. For this reason, state and federal programs in the US have predominantly focused on setting criteria based only on the primary flat glass rather than on processed glass or final window products. When assembly data is requested, standards like ASHRAE 189.1 and the International Green Construction Code (IgCC) allow EPDs for components to be submitted for assemblies if they cover > 80% of product weight or cost. This captures the bulk of the embodied carbon impact while balancing the availability challenges for downstream product EPDs.

Life Cycle Stages

The draft position paper suggests focusing on the A1-A3 life cycle stages, or “cradle to gate.” We agree that cradle-to-gate is the most widely used and manageable boundary. However, we urge the CBHCC to not completely dismiss Module D. Recyclability of materials is key to moving towards full environmental circularity. Glass and aluminum are infinitely recyclable, and certain other construction materials can be recycled too. Some EPDs such as for aluminum extrusions and curtain wall systems do already include Module D data. While we agree Module D data should be optional and not be required as part of this program for every material, optional credits or incentives should be created for including such data and considering full circularity.

* However, note that implementation time for any program including glass and glazing products will be an important consideration as the PCRs governing flat glass and primary glass need to be updated, and a decision needs to be made about whether or not to update the industry wide EPD (versus individual companies providing data).

Thank you again for the opportunity to comment, and please reach out with any questions or requests for further information. Please note that as NGA has such a diverse membership, we encourage you to also review any detailed comments that have been submitted by individual members. We look forward to continued partnership in improving the built environment in the public interest.

Sincerely,

Thomas D. Culp, Ph.D.
on behalf of the National Glass Association
culp@birchpointconsulting.com, 608-769-4915