Mayor's Office of Climate & Environmental Justice

NYC Buildings

Embodied Carbon Policy Stakeholder Session

Winter 2025

Agenda

- Introductions
- Context
- Proposal Overview
- Feedback/ Discussion
- Looking forward / Support

NYC Mayor's Office of Climate & Environmental Justice

NYC Buildings

Introductions

Context

Embodied Carbon Policy in NYC

- 2022: EO 23, the "Clean Construction" Executive Order, requires City agencies to submit product-specific EPDs for concrete and steel, collected by MOCEJ to the EC3 database. Other components of EO 23: low-carbon concrete specs (HPD Design Guidelines, DCAS, DEP specs), electric construction equipment, Whole Project LCAs.
- 2023: PlaNYC tasks MOCEJ/DOB with "Implement[ing] performance-based standards for low-carbon materials and equipment by 2025."
  - MOCEJ's draft Embodied Carbon text was first presented to the Department in July 2024.
- 2024: NYC signed the White House/RMI's Clean Concrete Pledge Initiative (November 2024)
- 2024-Today: Other aspects of Clean Construction are expanding citywide:
  - C40 Clean Construction Accelerator
  - North American Electric Construction Coalition
  - Mass Timber Studio
  - Ground Glass Pozzolan ("GGP")
- The Port Authority of NY and NJ ("PANYNJ") instituted EPD requirements (2020). Feedback from NYC agencies is that material suppliers working with PANYNJ have been trained in EPDs.

Proposal Overview

Proposal

- Type III Product-Specific EPD submission requirements for specified materials: initial phase includes concrete and steel, later on, DOB and MOCEJ can add material streams
- GWP Limits: Weighted averages per material
- Failure to comply can result in audit, inspection, and issuance of a Partial Stop Work Order.
- Covered buildings: New Building filings (including pavement plans), existing building alterations subject to New Building requirements, or existing buildings undergoing ”substantial work on the building envelope”. Total floor area at the end of construction must be > 3,000 sf.
    - Approx. 2,200 buildings per year would be covered, based on DOB permit history

Prescriptive v. Performance Construction Policy

- Prescriptive specifications impede sustainability efforts: often overly conservative, can lead to higher costs, negative results, and poorer sustainability
- Broad shift to performance-based specs and policy: outlining desired outcome of a product, focusing on final results rather than dictating specific methods/materials to achieve them
- Benefits:
  - **Innovation and creativity:** Allows contractors to propose creative solutions to achieve the desired outcome.
  - **Cost efficiency:** Potential for cost savings by allowing contractors to choose the most cost-effective methods.
  - **Flexibility:** Adapts to changing conditions or new technologies

Proposed Limits for Concrete

125% of the limit for concrete in the Eastern regional averages for concrete produced in the United States collected by the National Ready Mix Concrete Association (NRMCA) in 2021.

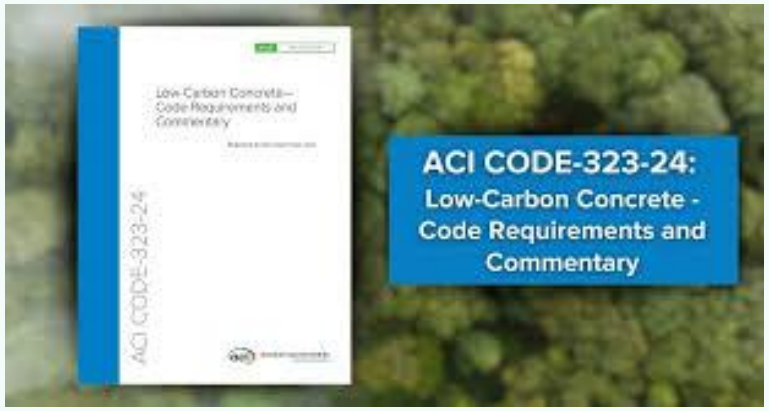
GWP Limits of Subcategories of Ready-Mix Concrete		
Concrete Strength Classes (psi)	Maximum GWP (kgCO2e/m3) for Ready-Mix Concrete	Maximum GWP (kgCO2e/m3) for Ready-Mix Concrete with lightweight aggregates
Less than 2,500	300	
2,500 to 3,000	330	646
3,001 to 4,000	392	716
4,001 to 5,000	472	785
5,001 to 6,000	499	
6,001-8,000	590	

Proposed Limits for Steel

Source	GWP Limits of Subcategories of Structural Steel	
Sources are varied due to no unitary industry group in the steel sector.	Eligible Material Subcategories	Maximum GWP (kg CO2e/metric ton)
CO Buy Clean, supported by MBMA, pretty aligned with GSA	Rebar/Reinforcing Steel	1030
CO Buy Clean, supported by AISC, pretty aligned with GSA	Hollow Structural Sections (HSS) Steel	1990
CO Buy Clean, supported by AISC	Plate Steel	1730
CO Buy Clean, supported by AISC, pretty aligned with GSA	Hot Rolled Steel	1220
Aligned with GSA	Cold-Formed Steel	2408

Weighted Average Formula

ACI 323 Low Carbon Concrete (2024)



Equation 1: Calculating weighted average GWPs for eligible materials

The weighted average GWP of an eligible material must be calculated using the methodology set forth in this [paragraph].

1. *Weighted average GWP of an eligible material*. The weighted average GWP in a covered building of an eligible material must be calculated as follows:

$$GWP_{eligible\ material} = \frac{\sum_{i=1}^{n} GWP_{subcategory\ i} \times Vol_i}{\sum_{i=1}^{n} Vol_i}$$

Where:

$GWP_{eligible\ material}$ = Weighted average GWP of an eligible material in a covered building, for the eligible material subcategories used

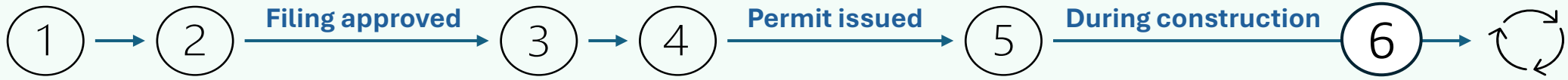
$GWP_{subcategory\ i}$ = GWP for an eligible material subcategory, i, used in a covered building

Vol_i = Amount of an eligible material subcategory, i, used in a covered building

n = Number of eligible material subcategories proposed for use in the covered building

DOB Permit Process

1. Job filing initiated in DOB NOW



3. EPD creation

3a. General contractor requests product-specific EPDs for covered project materials (concrete, steel) from material suppliers. GC must make sure the EPD is approved by database for listing and has a valid database hyperlink.

Ongoing Support

Database will provide EPD and GWP data and analysis to MOCEJ (in consultation with DOB) as needed for policy development purposes.

2. Attestation

2a. EPD covered buildings are automatically flagged in *DOB NOW* based on size and job type.

2b. Applicant (RDP) and Owner must both attest that project concrete and steel will be specified to be under statutory GWP limits. Other materials (in future) may be eligible for a waiver request at this point.

4. EPD submission

4a. EPD covered building filings will have an extra field added to their concrete and steel Special Inspection TR1s in which to paste the database hyperlink(s). BPP filings will have an extra Required Item prior-to-permit.

4b. Third-party special inspector must review the hyperlink before signing on to the TR1. Blank fields will prevent sign-on. Revisions to entered hyperlinks are possible but require special inspector to sign-on again.

5. Periodic inspections

5a. Special inspector verifies field conditions against submitted EPDs as part of regular site visits. Non-compliance may result in an open item that prevents TR1 sign-off.

5b. A percentage of EPD covered building job filings will be flagged for audit by DOB Energy Code Compliance prior to related concrete or steel work. Non-compliance may result in a Partial Stop Work Order.

6. TR1 sign-off

6a. Once relevant project scope is complete, special inspector can certify TR1 as long as GWP limits were complied with.

6b. Non-compliance at this stage of the project may require the building to reduce emissions in other ways (tbd).

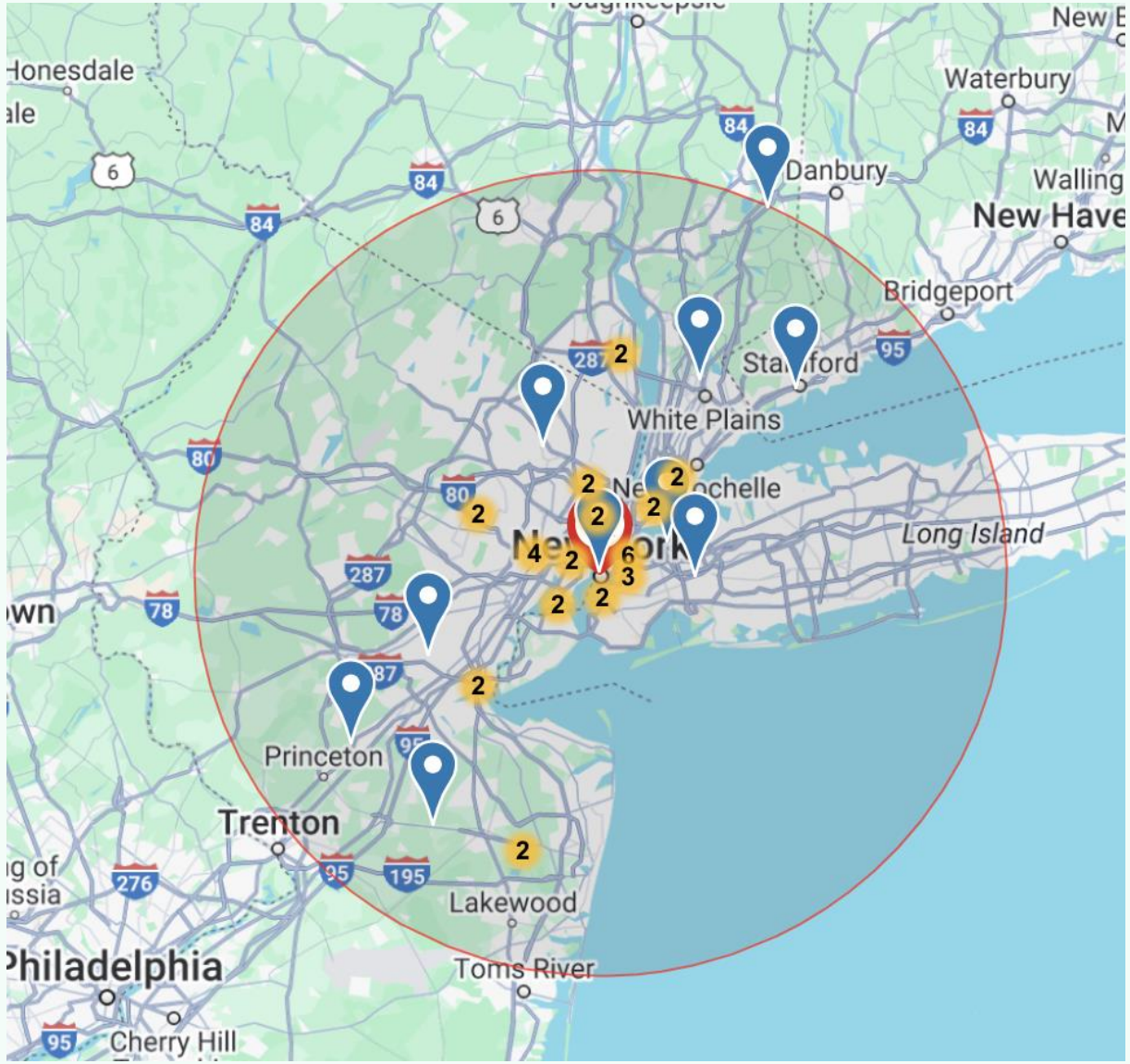
Updates to Eligible Materials and GWP Limits

- 180 days after the law would be passed, DOB would be required to promulgate rules establishing the proposed limits and the weighted average formula
  - This rules package will follow a public comment period of at least 60 days

- By 2030 and every 5 years thereafter, DOB and MOCEJ would meet to evaluate updates to the law based on:
  - Review of industry conditions, such as industry capacity, GWP averages as determined by EPDs submitted in the law, economic feasibility, and scientific literature

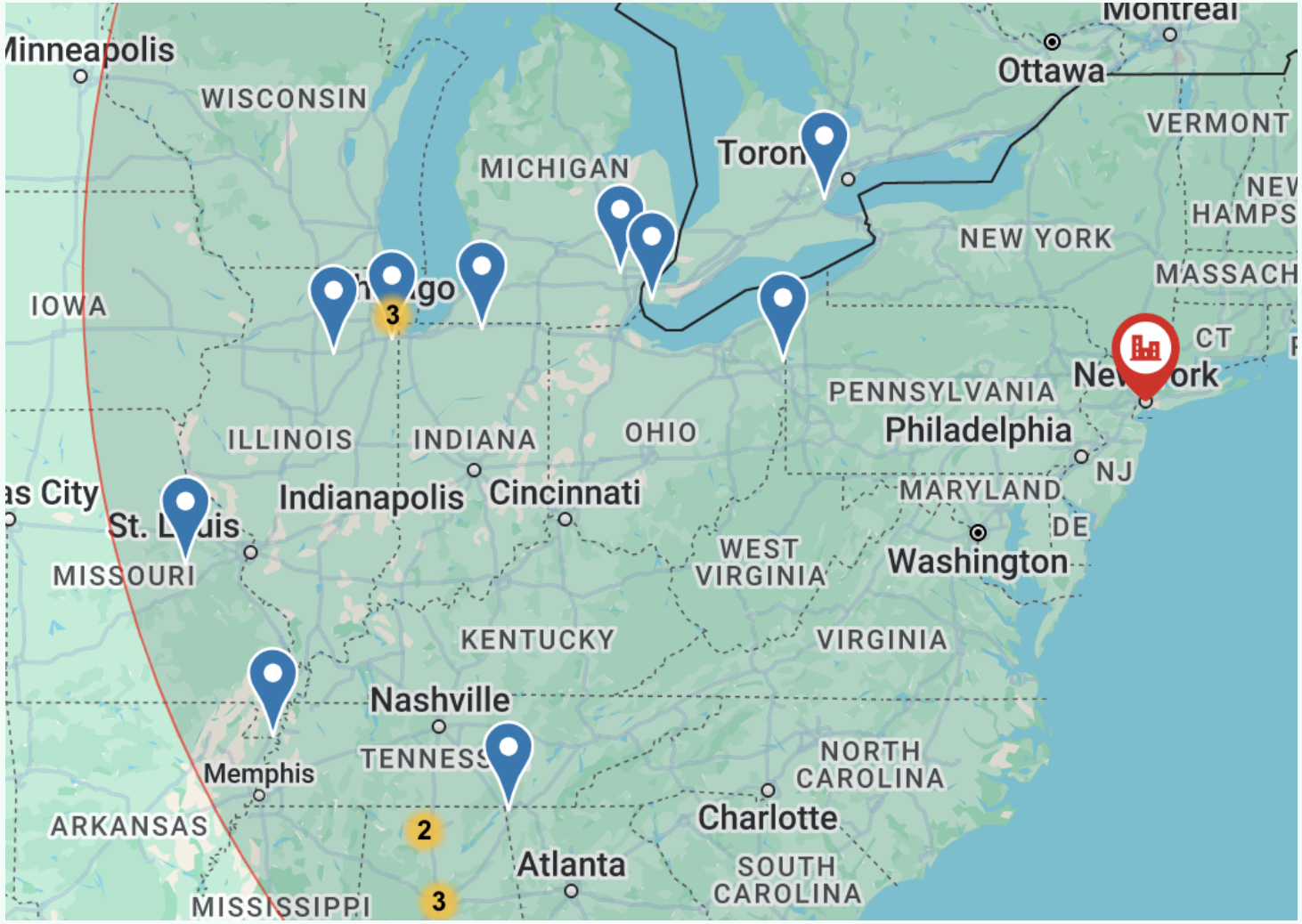
~4000 psi Ready Mix Concrete Availability:

4,000+ EPDs and 46 Plants within 50 mile "regional" radius



Steel Availability: HSS

36 EPDs and 20 Plants within 1000 mile "regional" radius



Feedback

Next Steps