

Article 37 Net Zero Carbon Zoning

Proposed Review Process and Procedures



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Today's Agenda

1. **Welcome - 5 minutes**

2. **Framing and Objectives - 10 minutes**

a. Goals and Requirements

Clarifying Questions / Comments

3. **Proposed Review Process - 10 minutes**

a. Roadmap of current and proposed process

b. Proposed methodology and practices

Clarifying Questions / Comments

4. **Embodied Carbon - 10 minutes**

a. Embodied Carbon 101

b. Proposed timing

Clarifying Questions / Comments

5. **Discussion**

Framing and Objectives

New Net Zero Carbon Standards



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Affordability, Resilience and Equity

- Net Zero Carbon zoning leads the transition to a low carbon future for both building operational energy and construction materials.
- Advances the City's goal of reducing carbon emissions across the building sector by ensuring new buildings are powered by renewable energy both on and off site.
- The City's adoption of the State Stretch and Specialized Energy Codes set the performance standard for Net Zero Carbon Ready buildings.

How is the City complying with its own buildings?

- Fossil fuel free new buildings Executive Order signed in 2023 goes beyond specialized stretch code
- Installing first geothermal for City project with intention for additional deployment
- 2.3 MW of solar installed on City property
- Actively pursuing renewable energy supply contracts with target for 100% renewable electricity by 2030.



New Net Zero Carbon Zoning - Requirements



1. Requires **Net Zero Carbon operational emissions upon opening**
 - a. Phased in for Hospital, General Manufacturing, and Lab uses
 - i. New Hospital and General Manufacturing will be net zero in 2045
 - ii. New Lab will be net zero in 2035
2. Requires **Embodied Carbon Reporting** (Building Structure & Enclosure ONLY) at Design / Building Permit Filing.
3. Continues **LEED certifiable** requirement (no change from current Article 37)
4. Applies to **new buildings with 15+ units or 20,000+ SF and additions < 50,000 SF**

New Net Zero Carbon Zoning - Exemptions

Net Zero Carbon Zoning **does not** apply to:

- Renovations
- Additions < 50,000 Gross SF
- Changes of Use

Compared to constructing a new building of similar size, large-scale adaptive reuse projects combined with energy efficiency upgrades have the potential to significantly reduce carbon emissions.



Image: 259-267 Summer St.
Office to Resi pilot program



Specialized Energy Code set projects up for success

Meet the requirements of the specialized energy code. For many housing projects Passive House certification is the ideal code pathway.



Low embodied materials

Recent updates to stretch energy code include prescriptive options for low embodied carbon materials.



Green Energy Procurement

Net Zero Carbon Zoning (Article 37) focus is on operational emissions. Green electrons can come from both on and off-site

New Net Zero Carbon Zoning - Timing

Starting July 1, 2025: New project filings will be required to meet Net Zero Carbon emissions standard upon completion.

Once a building is constructed and in operation, compliance with net-zero emissions will be demonstrated through.

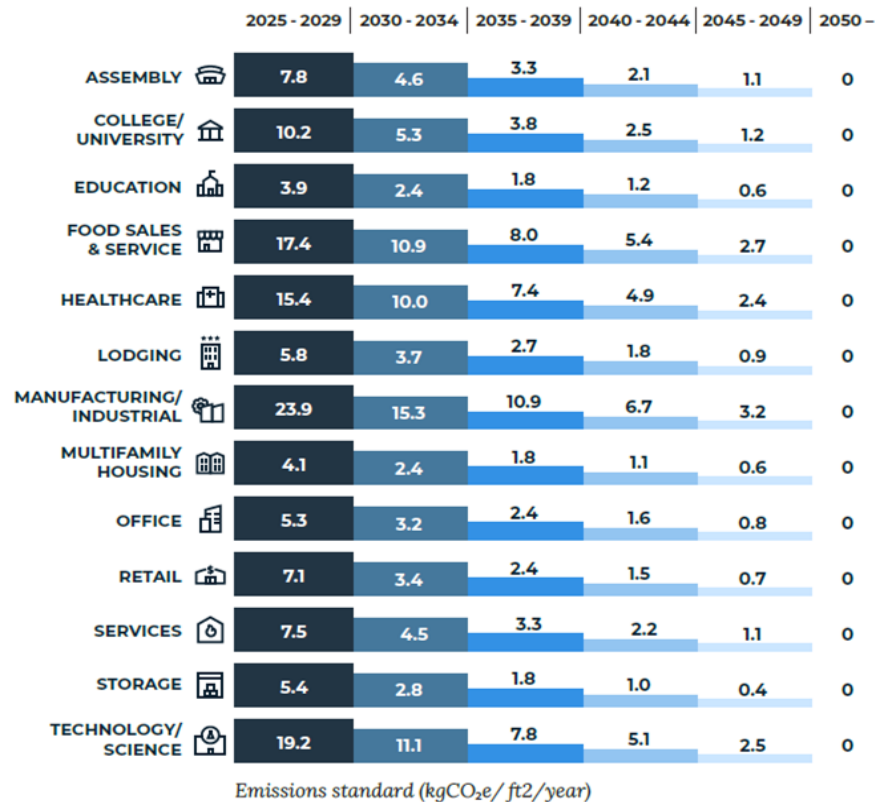
BERDO compliance mechanisms and annual reporting.



New Net Zero Carbon Zoning is based on BERDO



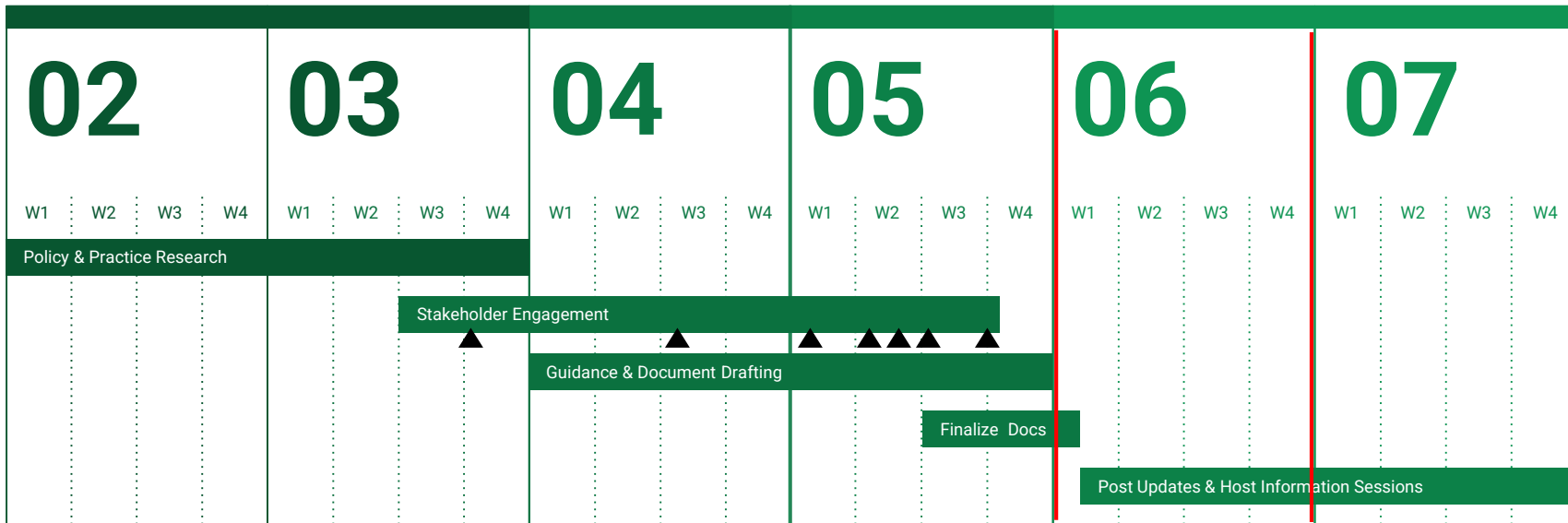
- Background: BERDO requires existing buildings to decrease emissions over time and achieve net zero emissions by 2050.
- **Net Zero Zoning will require new buildings to be Net Zero Ready** or for, high intensity uses, accelerate their emissions reductions in comparison to BERDO.
- Once in **operation** a new building will need to **demonstrate net zero compliance** under BERDO.
- Net Zero Zoning will use **BERDO to track compliance**



Implementation Timeline

Key Phases & Dates:

- July 1st - ZNC requirements effective
- June 1st - Post updates guidance & documents for new filings
- March to May - Stakeholder Engagement



For stakeholder discussion – May 1, 2025

We want to hear from you!!!



Net Zero Carbon Zoning - Clarifying Questions & Comments?

Article 37 and Net Zero Zoning Draft Review

Proposed Review Process



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Article 37 Implementation & Modernization Goals



Predictability

- Clear guidance on filing requirements / Knowing when feedback will be provided

Integrated Process - Article 80 Review

- Coordinated feedback and comments / Collaborative staff reviews

Modernized Process

- Consolidation of submission documents - fewer checklists
- Non-unique documents - utilize documents required by others and standard practice documents
- Progressive reporting - update of prior submission (minimize new documents)
- Continued alignment with MOH, BERDO, and State standards

Small Project Review Application (SPRA): 15+ Units or 20,000+ SF up to 50,000 SF

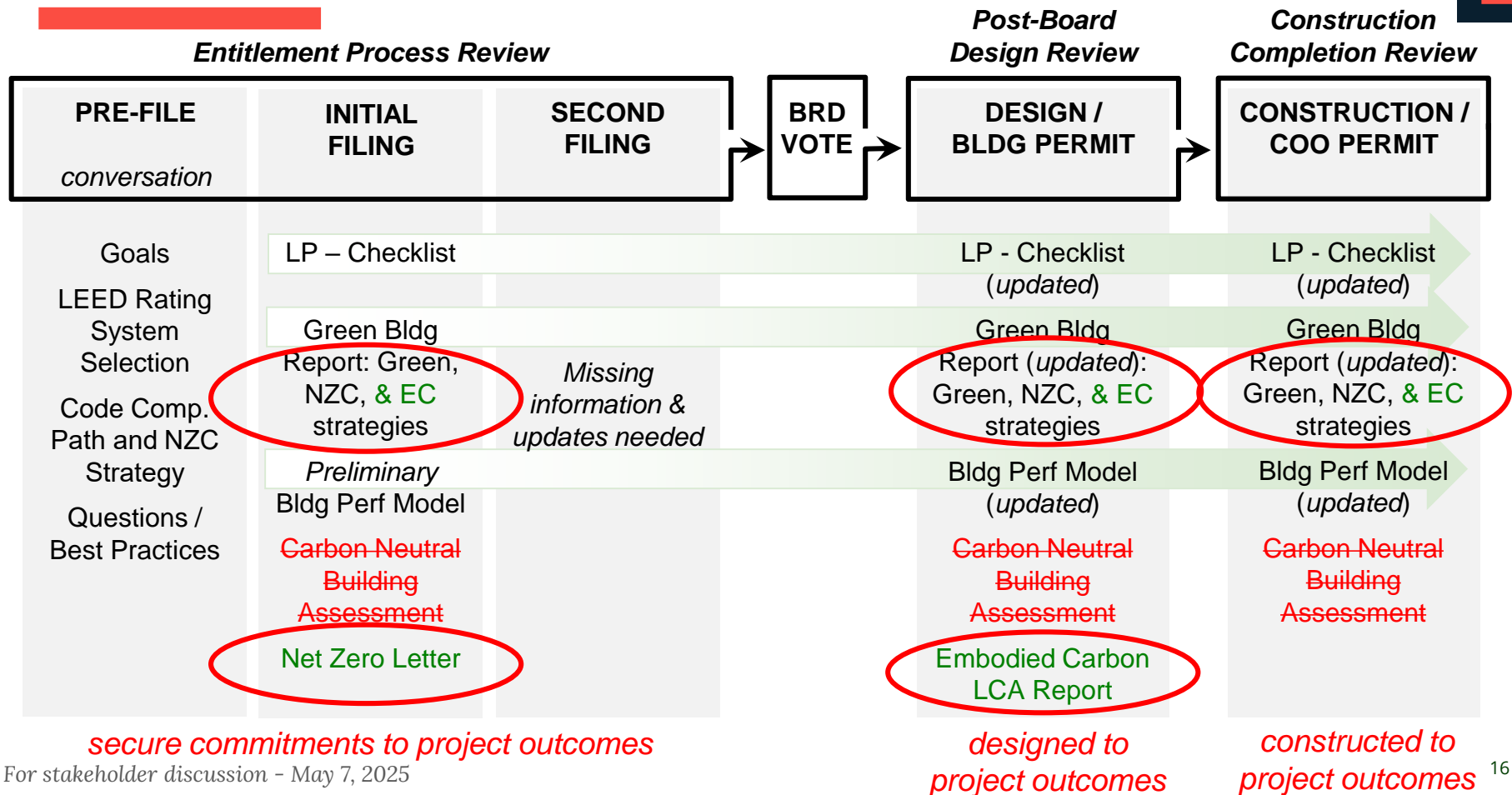
- **Small Project A37 Checklist** - completed online, report included in SPRA
- **Net Zero Greenhouse Gas Emissions Acknowledgement Letter** (template)

Note: Small Projects do not have LEED Green Building requirements

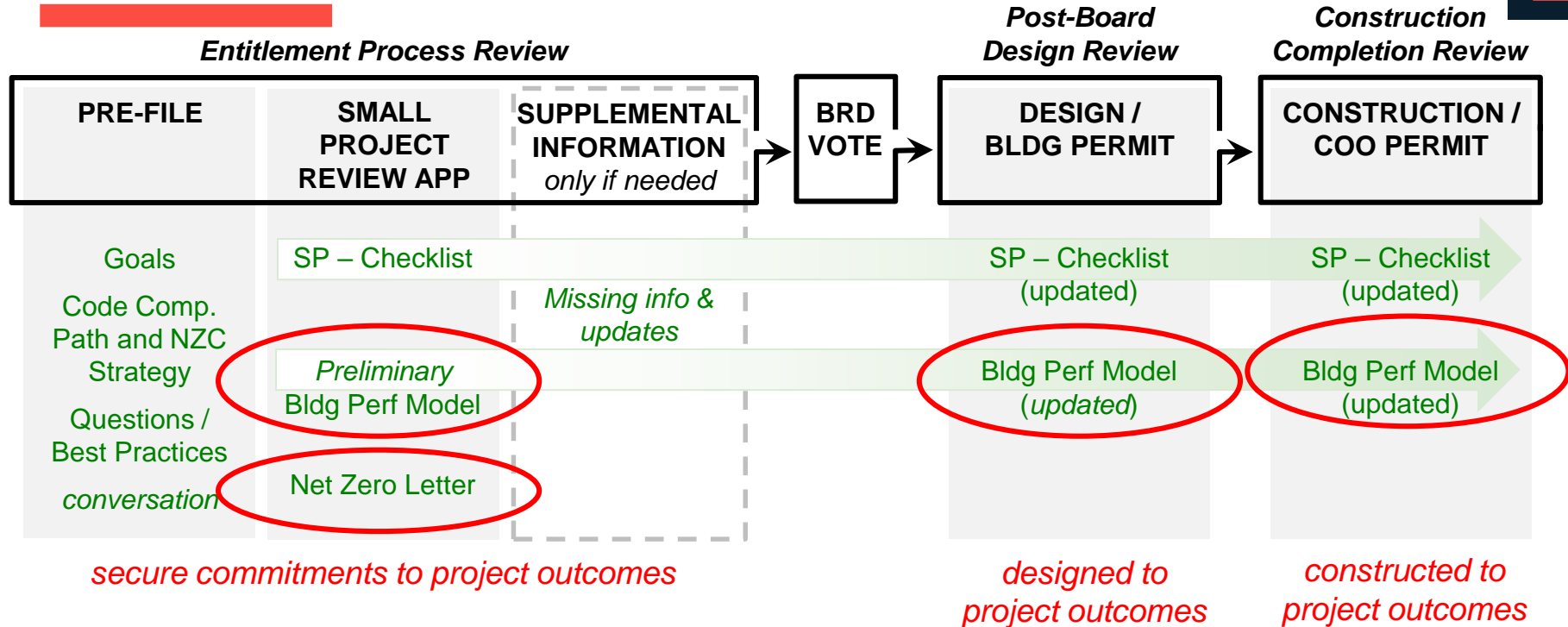
Large Project Notification Form (PNF): 50,000 SF +

- **Large Project A37 Checklist** - completed online, report included in PNF
- **LEED Certifiable** - green building summary and report
- **Embodied Carbon Life Cycle Assessment Report** - at Design / Bldg Permit
- **Net Zero Greenhouse Gas Emissions Acknowledgement Letter** (template)

PROPOSED Article 37 ZNC Process – Large Project Review



PROPOSED Article 37 ZNC Process – Small Project Review



Building Performance Modeling

New Requirement	How it could work
<p>Demonstrate building is designed to comply NZC by completing & submitting Article 37 Checklist with Small Project Review Application.</p> <p>Prel. Perf. Modeling & integrated planning ensure best practices including site and building planning for energy infrastructure and equipment (e.g. transformers, PV).</p> <p>In support of best practice, Mass Save provides funding for preliminary performance modeling.</p>	<p>Small Project Review Application:</p> <p>Article 37 Checklist - completed on Developer Portal</p> <p>Provide Preliminary Performance Model (e.g. PH Feasibility Study) or similar supporting analysis preferably with application BUT prior to Board Vote.</p> <p>Design / Building Permit Filing:</p> <p>Article 37 Checklist - updated on Developer Portal</p> <p>Provide State Energy Code Building Performance Model (e.g. updated Preliminary model or PH Wufi model) for</p>

We want to hear from you!!!



Review Process & Building Performance Modeling - Clarifying Questions & Comments?

Embodied Carbon

Introduction and Proposed Reporting



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Why We Are Talking About Embodied Carbon?



Embodied Carbon

Embodied Carbon: Greenhouse Gas Emissions associated with stages of products' lifespan — extraction, production, transport, and manufacturing. Embodied Carbon accounts for almost half of a building's total GHG emissions over its lifetime.

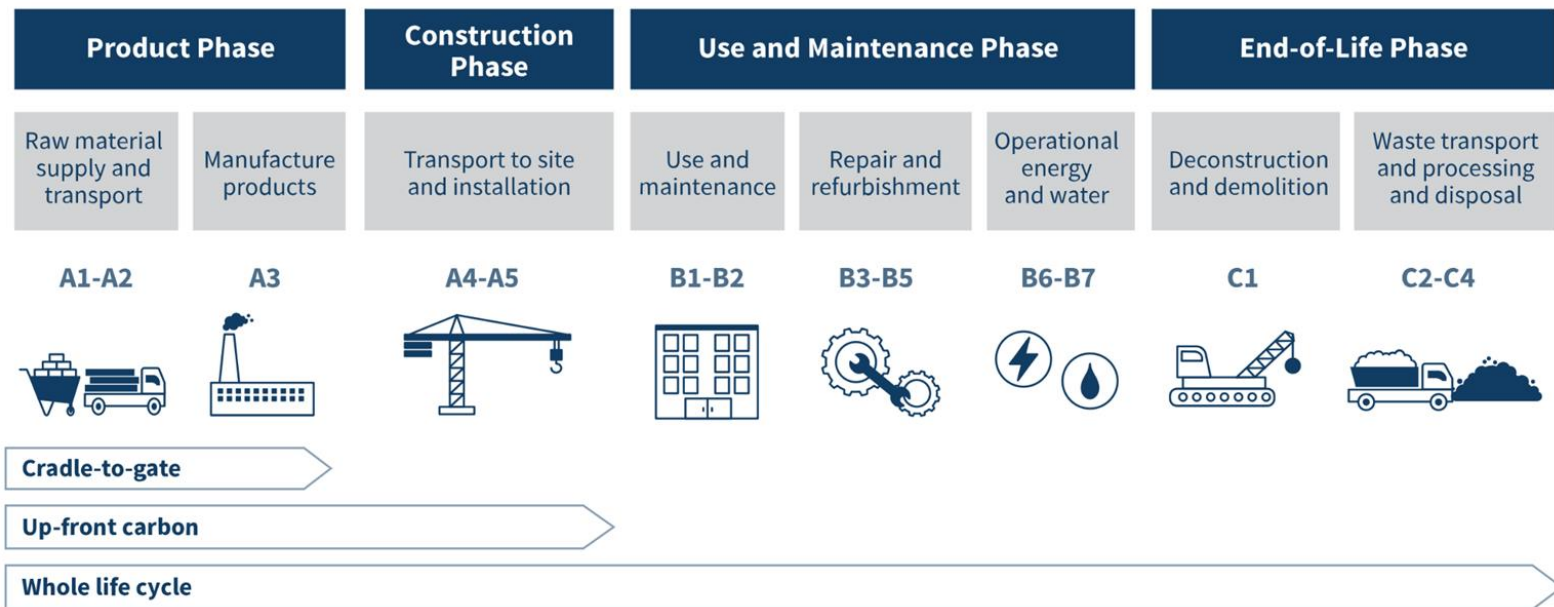
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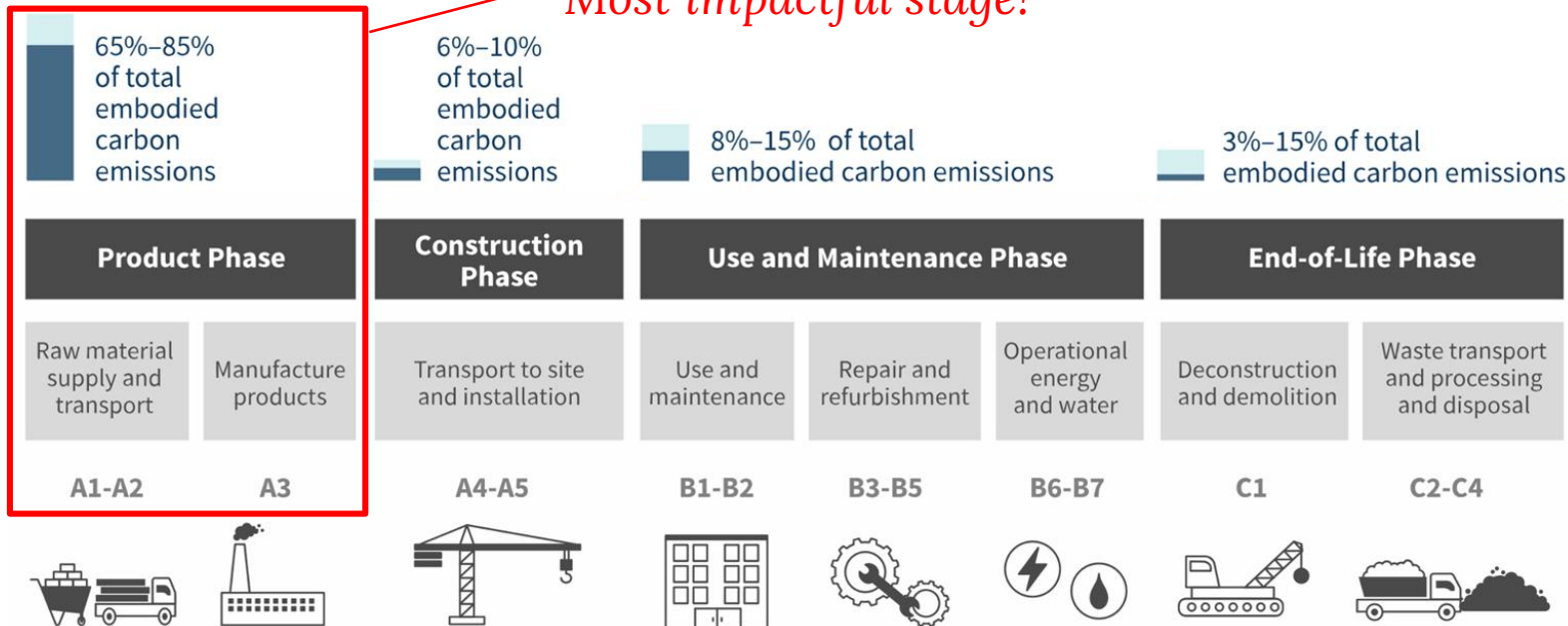
Building Emissions: Greenhouse Gas Emissions associated with a building's operations.

What Is Life Cycle And Global Warming Potential?



What Is Life Cycle And Global Warming Potential?

Life-Cycle Assessment Phases



Plus carbon sequestered in “biogenic” materials (e.g. wood products)

Education and Awareness

GOAL #1

Advance low Embodied Carbon building practices by supporting professional education, awareness and promoting best practice strategies

Data Collection

GOAL #2

Gather Embodied Carbon building data including key performance metrics, material / product information. Further develop incentives, and resources for implementation

JULY 1, 2025

Begins for New Filings

LCA Report Due at Design / Bldg Permit

... so Mid 2026

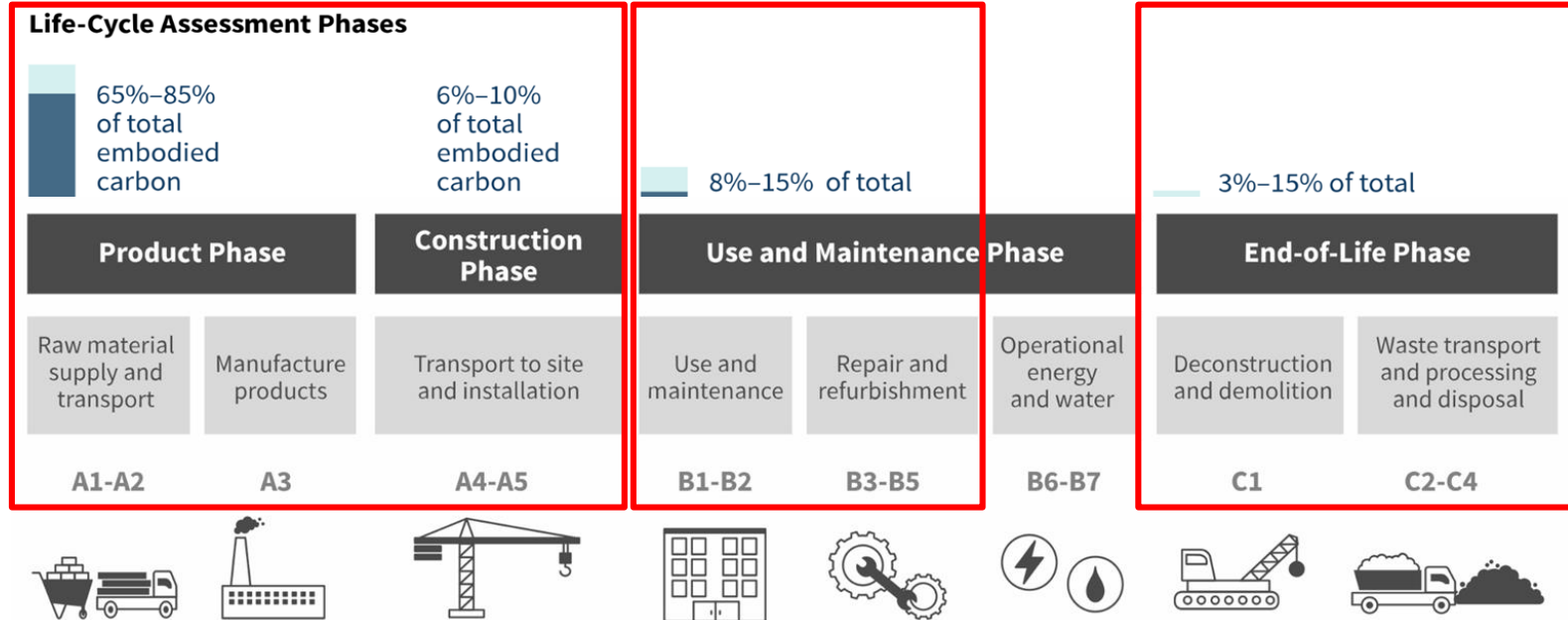
Embodied Carbon - PROPOSED Reporting

New Requirement	How it could work
<p>Report Building Structure and Enclosure Embodied Carbon by submitting an Life Cycle Analysis Report prior to Certificate of Completion (with Design / Bldg Permit Filing).</p> <p>Practice leaders and many projects already include low Embodied Carbon building solutions. Successful practices rely on early design phase analysis and integrated planning to realize solutions. Examples: low carbon concrete, Mass Timber / MT hybrid structure, Glavel, insulation options, etc).</p>	<p>Initial Filing (PNF):</p> <p>Identify and describe potential low embodied carbon strategies to be considered or included in the project.</p> <p>Optional -Share any supporting analysis, cost-benefit determinations, and best practices.</p> <p>Design / Building Permit Filing:</p> <p>Submit a Structure and Enclosure Carbon LCA Report.</p> <p>Optional - additional LCA reporting (e.g. Whole Building LCA)</p>

Embodied Carbon Life Cycle Analysis Report

- Submitted with Design / Building Permit Filing - *post building design*
- LCA Reporting Template - *City provided*
 - Clear metrics (e.g. kg CO₂e/SF) and normalized data
 - Defined reporting parameters
- LCA “Tool Stack” - *clarify what tool to use and when*
 - Preliminary - Pathfinder, C.Scale, CARE, Kaleidoscope
 - Analysis & Reporting - Tally, One Click LCA, Athena
 - Granular Analysis - BEAM tool (builder friendly)

Life Cycle Analysis - Boundaries



Plus carbon sequestered in “biogenic” materials (e.g. wood products)

We want to hear from you!!!

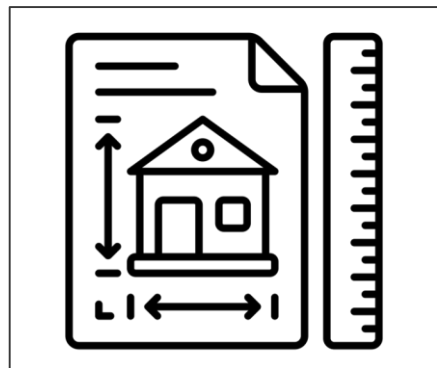


Embodied Carbon - Clarifying Questions & Comments?

- **Carbon Emission Calculator Tool**
 - Assists Project Teams in calculating operational carbon emissions over time, assessing design decisions, and understanding renewable energy procurement quantities and options to meet NZC
 - Uses BERDO based carbon emissions factors and calculations
 - Calculates each energy source contribution to total emissions (e.g. Electricity, Gas, etc)
- **Standing Planning Dept Office Hours** and continued support to meet min. requirements
- **BERDO Reporting and renewable energy guidance and support** (BERDO team led)
- **Updated A37 Reporting Guidance and support** (Planning team led)
- **Best Practises Guidance** - City and professional organisations
- **Local Training and Education** - Carbon Leadership Forum, BE+ embodied carbon series

We want to hear from you!!!

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ARTICLE 37 NZC REVIEW PROCESS

Our Goals:

- Update and Modernize the Article 37 review process
- Set up projects for success under BERDO.

Questions:

- Have any of your projects achieved zero carbon performance, included low carbon strategies, solar PV?
- Are any of your projects purchasing renewable energy or planning to do so?
- Have any of your projects included low embodied carbon building materials, products, or strategies?
- What assistance would aid your teams in reducing carbon emissions and achieving net zero carbon performance?
- Are there specific aspects of the proposed submission and review process that seem challenging?
- Are there resources or guidance that would improve the submission and review process?

Thank you! Please feel free to contact us:

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