Carbon Free DC by 2050 – New Construction & Embodied Carbon Discussion
9/23/20

We need to begin all net-zero new construction in 2026. What are the barriers you face today that stand in the way of making this shift at scale?

- Reluctance among architects, designers, and contractors to go net-zero without being required (e.g. by building codes) to do so
- Delays in adopting and implementing new codes
- Lack of agreement of definition of net-zero
- Lack of knowledge among builders, developers, and architects
    - Unwillingness to invest in training until requirements force investment
- Cost (real or perceived)
    - Uncertain payback period on investment
    - Inability to justify additional upfront cost upon immediate bottom line
    - Lack of incentives
- Competing priorities, particularly for roof space
- Too many delivery/demolition vehicles travelling to and from buildings
- No market incentive to reduce carbon / achieve net-zero

What solutions could address these barriers?

- Certifications and/or endorsements
    - Required of professionals submitting/certifying plans
    - Required of construction firms to work in the District
    - Free/online training programs to obtain these certifications/endorsements
        - Knowledge building
        - Best practices workshops
- Incentives
    - For construction companies to employees who specialize in net-zero buildings
    - To fund leading edge projects prior to code
    - Special tax credits or bonds funding
- Concrete Environmental Product Declaration (EPD) requirements
- Push-pull marketing strategies on the cost of carbon
- Improved permitting for geo-exchange systems
- City leadership & support
    - Build market support
    - Policy, educational/ technical resources, and funding dedicated to influencing building industry toward net zero
    - Support and guidance on best practices for offsite renewables

What would you need to begin addressing embodied carbon in the design and construction of buildings?

- Training for architects, designers, contractors on how to intuitively identify potential embodied carbon in building products
    - Simple tools to characterize embodied carbon in projects
    - Guide/tables listing embodied carbon in building materials
    - Online lifecycle carbon assessment training
- Certifications/directory of suppliers that provide embodied carbon data of their products

- Region-specific baseline (and robust data to set that baseline)
- Concrete standards and requirements
- Work with manufacturers to create mix specific type II EPD's
- Report new construction kg/CO2/sf
- Support Mass Timber in building and fire codes
- Requiring assessment and disclosure of embodied carbon in any building subject to the Green Building Act--the new EC3 tool makes this easier and lower cost and thus a reasonable ask in a way it may not have been before
- Explore reducing, reusing and recycling as much demolition waste from construction as possible

Where would you start (materials, project types) if you were working to address embodied carbon?

- Materials
    - Concrete, steel, insulation
    - Incentives for low-carbon tech – e.g. concrete manufacture, carbon-absorbing concrete, timber construction
    - Standard CO2e for specific materials
    - Resources for purchasing recycled materials
    - Add materials to EC3 tool
    - Support for using/local availability of lower embodied carbon concrete
- Involve manufacturers and structural engineers to design low EC
- Focus on manufacturing A1-A3 phases (largest EC impact)
- Identify largest consumers (e.g. DDOT) and identify EC targets
- Ensure that construction operation emissions are tracked
- Support reuse of existing building over demolishing & rebuilding, in acknowledgement that from a lifecycle perspective, the greenest buildings are the ones that exist already
- Resources:
    - The Greenest Building: Quantifying the Environmental Value of Building Reuse
    - The New Carbon Architecture
    - Making Better Buildings

How might we need to add to or tweak these ideas in order to advance equity -- in design or implementation?

- Provide resource centers/experts available to offer guidance in real time to designers, specifiers and contractors
- Data points needed on GHG impact cost relative to the main structure and enclosure materials.
- Bring a low-EC ready-mix product to market e.g. Home Depot, Lowes?