CASE STUDY

Evaluating Carbon and Cost During Bid Leveling

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General contractors (GCs) can unlock both embodied carbon reductions and cost savings by incorporating an embodied carbon emissions evaluation into the bid leveling process — the process by which GCs compare proposals against project criteria such as cost, performance, and schedule. This case study highlights how Skanska, a global project development and construction company, incorporates embodied carbon from ready-mix concrete suppliers into its bid leveling process, demonstrating how carbon and cost can be evaluated together to inform award decisions.

The Challenge

Bid leveling traditionally focuses on cost, schedule, scope of work, and quality of the product to be delivered and installed. However, without including embodied carbon data, general contractors lack visibility into the emissions impact of competing bids. For materials like ready-mix concrete, which is often one of the largest sources of embodied carbon on a project, this creates missed opportunities to reduce emissions without increasing costs. So, by incorporating embodied carbon into this process, GCs can normalize costs, prioritize project goals, identify gaps across bids, and consider both carbon footprint and cost when choosing supplier bids.

The Approach: Bid leveling is the most critical point in time for GCs to evaluate embodied carbon, as suppliers or subcontractors are typically awarded contracts based on their bid proposal during this phase. Integrating embodied carbon emissions into the bid leveling process requires several key steps, starting with educating suppliers and collecting the right data.

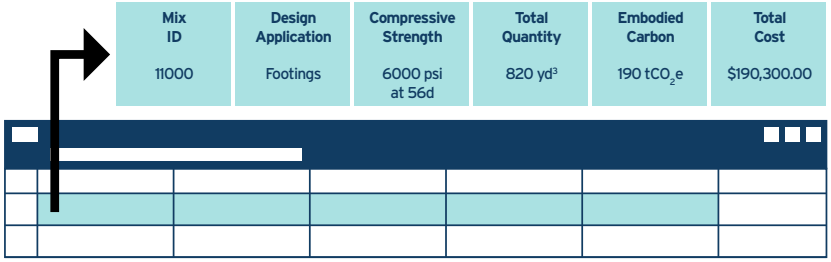
1. Set clear expectations: First, the GC provides a bid exhibit to inform suppliers about their sustainability commitments and how they use embodied carbon emissions data during bid leveling. This upfront transparency is critical to show how carbon will be evaluated alongside cost. For example, with ready-mix concrete, the GC would provide:

- A base bid for traditional ready-mix concrete
- A voluntary lower-carbon alternate bid.

This structure enables GCs to compare trade-offs between cost and carbon footprint across multiple options.

2. Gather consistent data: To ensure fair comparisons, the GC gathers data for both the base and lower-carbon alternative bids. For concrete, this can include compressive strength, mix design by application, mix ID, volume, EPD availability, embodied carbon, delivery rates and cost. This data helps normalize bid costs based on embodied carbon emissions (global warming potential, measured in kg CO_2e) and volume (yd^3), while ensuring apples-to-apples comparisons of concretes mixes with similar performance and applications. This comparison can be done for each Mix ID or at the full project level.

Exhibit 1: Sample Bid-Leveling Evaluation Parameters



3. Ensure high quality: After bid forms are received, the GC performs quality control on the collected data. For larger GCs, the sustainability team analyzes the carbon data in collaboration with the preconstruction and project management teams. Typically, type III EPD data is publicly available, so when supplier bids are returned, the GC can find the equivalent EPD for each mix ID and assign mix-specific emissions factors accordingly. For suppliers who do not have type III EPDs, GCs can assign industry-average emissions factors to each mix.

The Approach (cont.)

4. Analyze and rank: The GC can either use the Embodied Carbon in Construction Calculator (EC3) bid leveling function or develop a custom leveling spreadsheet to analyze the bids and rank bidders based on carbon emissions and the final leveled (normalized) cost.

5. Communicate and award: The GC communicates the bid results to all bidders once an award is made, so they understand how they evaluated cost, embodied carbon, and other project goals. This further educates suppliers, signals to the supply chain that there is demand for low-cost, low-carbon alternatives, and creates additional competition among suppliers.

Example A: High Rise Multifamily Project

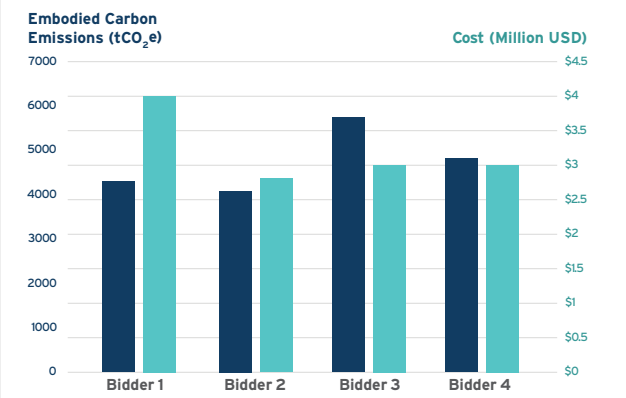
Skanska conducts embodied carbon bid leveling on all of its self-performed concrete projects in the Pacific Northwest. In this example, Skanska used bid leveling to evaluate four ready-mix concrete bidders for a high-rise multifamily residential building project.

Outcome: Bidder 2 was selected because they:

- Could meet the project timeline
- Had strong past performance
- Offered the lowest-cost and lowest-carbon concrete mixes

In several of its projects, Skanska found that the lowest-cost option can also deliver the lowest embodied carbon, demonstrating that carbon reductions do not always require cost premiums.

Exhibit 2: High Rise Multifamily Bid Comparisons



Source: Skanska

Example B: Secondary School Project

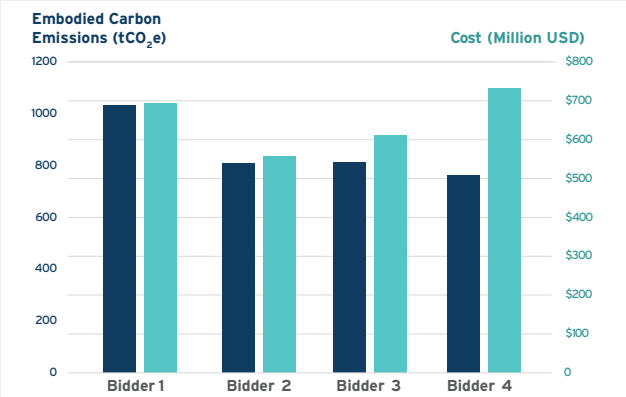
On a secondary school project, Skanska again evaluated bids based on cost, carbon, the supplier's ability to meet the project timeline, past performance, and other project goals.

In this case:

- Bidder 4 offered the lowest carbon emissions but at a significantly higher cost than other bidders
- Bidder 2 offered lower cost, but higher carbon emissions
- Bidder 3 offered the second-lowest cost and was tied for second-lowest carbon

Outcome: Skanska selected Bidder 3 based on the GC's experience with this supplier, their backlog of work (which can influence the timeline), and the marginal difference in total emissions between Bidder 3 and Bidder 2.

Exhibit 3: Secondary School Bid Comparisons



Source: Skanska

Communicating the bid results to all bidders helps signal demand for low-cost, low-carbon materials.

The examples above illustrate that selecting a contractor is not always as straightforward as choosing the bid with the lowest carbon and cost. All GCs level bids on cost, schedule, and other factors covered in this case study. This approach simply adds carbon as another evaluation criteria when determining a bid award.

ADDITIONAL RESOURCES

Conscious Concrete Implementation Strategy (CLF)

Lower-Carbon Concrete Guide (Lower Carbon Concrete Task Force)

IRA Low-Embodied Carbon Material Requirements (U.S. General Services Administration)

Carbon Calculator (National Ready Mixed Concrete Association, NRMCA)

Structural Materials Low-Carbon Specification Guidance (SEI SE 2050)