MANDATING LOW CARBON CONCRETE TO ACHIEVE EMBODIED CARBON REDUCTIONS IN THE BUILDING SECTOR

Hodgson Russ Municipal Alert
May 16, 2022

Concrete production is responsible for approximately eight percent of total global carbon emissions. Efforts aimed at decarbonizing buildings and infrastructure must consider the need to reduce embodied carbon emissions in building materials like concrete. Marin County, in the Bay Area of California, sought to address this issue through the enactment of a building code that limits carbon emissions from concrete ("Low Carbon Concrete Code" or "Marin Code").[i] Although New York Governor Kathy Hochul signed Senate Bill S542A on December 22, 2021, relating to procurement of low embodied carbon concrete through state agency contracts, municipalities across the state can do more. Utilizing authority under various enabling statutes, including Article 11 of the Energy Law, New York municipalities can consider adopting a similar low carbon concrete code as a pathway for achieving emissions reduction and building decarbonization goals at both the local and state levels.

I. Marin County's Low Carbon Concrete Code

Embodied emissions—as opposed to operational emissions—are generated from the extraction, manufacturing, and transportation of building materials used in construction. Portland cement, an element of concrete, is largely responsible for the embodied emissions associated with concrete, and is the largest source of embodied emissions in buildings. By replacing Portland cement with recycled materials, carbon emissions from concrete can be drastically reduced. To put this into practice, Marin County's Low Carbon Concrete Code mandates that residential and commercial construction:

1. replace Portland cement with supplementary cementitious materials, including fly ash, slag, and ground glass;
2. minimize the amount of cement in mixes; and
3. change the requirements for how quickly concrete has to cure to allow for less cement to be used.

Attorneys

Daniel Spitzer
Carmine Castellano
Alicia Legland
Mohammed Alam
John Alessi
Luisa Bostick
Christopher Canada
George Cregg
Glen Doherty
Joshua Feinstein
Peter Godfrey
Ryan Lucinski
Charles Malcomb
Elizabeth McPhail
Adam Perry
Aaron Saykin
A. Joseph Scott III
Jeffrey Stone
Jeffrey Swiatek
Marla Waiss
Michael Zahler
Nadene Zeigler
Henry Zomerfeld

Practices & Industries

Municipal

The Marin Code sets forth certain cement and embodied carbon limits based on the minimum specified compressive strength necessary as reflected in the table below:

Cement and embodied carbon limits can be increased by up to 30% for certain concretes that are deemed by the Building Official to require high early strength, including precast and pre-stressed concrete. Additionally, the maximum cement content may be increased proportionately above the tabulated value when using an approved cement, or blended cement, pursuant to an approved environmental product declaration ("EPD") having a plant-specific EPD lower than 1040 kg CO2e per metric ton. While the Marin Code still allows for higher amounts of cement where it is needed, low carbon concrete combines strong and durable building materials with a lower environmental cost.

To comply with the Low Carbon Concrete Code, applicants must submit a completed Low Carbon Concrete Compliance Form to the building department prior to receiving a building permit for construction involving the placement of concrete. Further, as a condition to the building permit, the applicant must submit batch certifications and/or EPDs from the concrete provider demonstrating compliance with the Low Carbon Concrete Compliance Form. When construction projects deviate from compliance with the Low Carbon Concrete Code, the chief building official can require evidence of equivalent carbon reductions from portions of remaining construction to demonstrate alternative compliance. For projects involving concrete used by or for public works, parks, or similar departments, the department or an assignee must accurately record the total volume of all concrete placed, as well as the total *compliant* volume of concrete placed. This data must be reported annually to the County demonstrating the percentage of annual compliance.

Finally, the Marin Code provides an exception for applicants who demonstrate that strict compliance imposes a hardship or would be infeasible. Hardship or infeasibility may be present where there is a lack of commercially available material necessary to comply; the cost of compliance is disproportionate to the cost of the project; or where compliance would impair the integrity of historic buildings. To be granted an exemption, the chief building official must determine that there is such hardship or infeasibility and that granting the exemption will not result in the subject building failing to comply with the California Building Standards Code. If the chief building official deems that there is a threshold of achievable compliance, the applicant is required to comply with the Marin Code in all other respects possible and achieve that threshold of compliance. Lastly, where a requested exemption is denied, an applicant may appeal such determination to the Marin County Building Board of Appeals.

II. Senate Bill S542A

In New York, Senate Bill S542A, otherwise known as the Low Embodied Carbon Concrete Leadership Act ("Act"), lays the foundation for the establishment of guidelines for the procurement of low embodied carbon concrete. Under this legislation, contracts involving low embodied carbon concrete must mandate that contractors and subcontractors certify that all completed work and procured low embodied carbon concrete meet the minimum standards established under the law. The Act also grants the Office of General Services ("OGS") the authority to adopt guidelines requiring the use of low embodied carbon concrete on projects it deems appropriate. In creating these guidelines, OGS will consider industry standards and consult with a stakeholder advisory group comprised of two licensed professional engineers, two licensed registered architects, two construction industry representatives, two concrete testing and validation industry representatives,

two accredited school of civil engineering representatives, one NYSERDA representative, and one representative each from the Departments of Transportation, State, and Environmental Conservation. Before creating guidelines, the Act also mandates that OGS:

- Consult with any relevant associations that set industry standards for the procurement of low embodied carbon concrete;
- Consult with affected contractors and subcontractors to consider impacts on the environment, public health, and safety;
- Examine the use of incentives, such as bid credits, related to bids within five percent of the lowest price to encourage low embodied carbon concrete use and innovation; and
- Examine the use of implementing standards for performance based specification and methods of compliance.

Any guidelines adopted pursuant to the Act or recommendations for subsequent legislative action resulting from bid credit incentives must be submitted to the Governor, the President Pro Tempore of the senate, and the Speaker of the Assembly by the earlier of thirty days from the issuance of the guidelines or within one year from the effective date of the Act. Additionally, the Act requires that the Commissioner of OGS consult with the Department of Transportation and the stakeholder advisory group to examine the use of an expedited product evaluation protocol for low embodied carbon concrete products.

Hodgson Russ Takeaways: Although the State Executive has acted on low carbon concrete, the work isn't done. First, the law leaves much to be defined and laid out by the subsequent guidelines. For example, the law fails to actually define low embodied carbon concrete. Absent this definition, the law allows cement companies to burn damaging waste instead of coal. Second, and most importantly, New York municipalities can do more. Towns, cities, and villages across the State, as the true regulators of the built environment, can follow the blueprint laid out by Marin County to achieve emissions reductions in the building sector. Article 11 of the New York State Energy Law (*i.e.*, the State Energy Conservation Construction Code Act) gives municipalities the authority to enact energy efficient construction requirements to further energy conservation techniques and ensure energy supplies for future generations. Specifically, Section 11-104 encourages the improvement of construction materials and techniques that minimize energy consumption and enhance energy conservation. With this framework already in place, New York municipalities are well-positioned to adopt their own low carbon concrete building codes.

If you have any questions about New York's emissions reduction or building decarbonization efforts—or any other renewable energy programs—contact Daniel Spitzer (716.848.1420), Carmine Castellano (646.218.7571), Alicia Legland (518.433.2416), or any member of our Renewable Energy practice.

[i] https://www.marincounty.org/depts/cd/divisions/sustainability/low-carbon-concrete