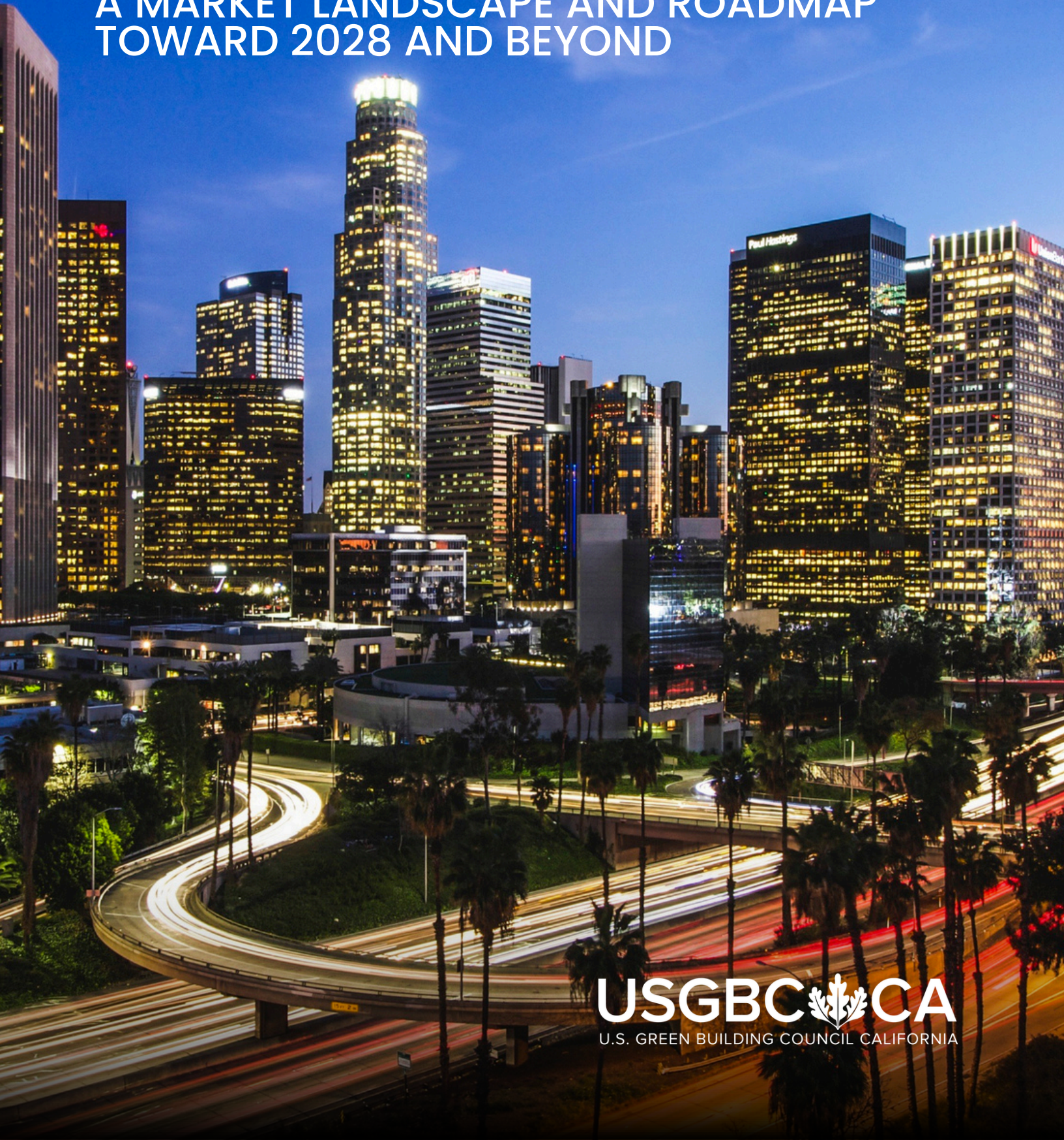


LOWER CARBON CONCRETE IN GREATER LOS ANGELES

A MARKET LANDSCAPE AND ROADMAP TOWARD 2028 AND BEYOND



USGBC  **CA**
U.S. GREEN BUILDING COUNCIL CALIFORNIA

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SPECIAL THANKS TO RFI SUPPORTING SPONSORS



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A Letter from our CEO

Concrete is everywhere, from the sidewalks we walk on, to the streets we travel, as well as the buildings and infrastructure that make up the fabric of our communities. It is also one of the most important opportunities we have to reduce the carbon impact of the built environment, right now, today.

The Greater Los Angeles region is one of the largest concrete markets in the country. And as we prepare to welcome the world for the 2028 Olympic and Paralympic Games, we have a rare opportunity to use that scale not simply to build differently for one event, but to accelerate lasting change in how we design, specify, procure, and produce concrete across Southern California, and beyond. Then we can share that with the rest of the world so they can do it too.

That was the idea behind this effort. We set out to understand what lower-carbon solutions are available today, what is coming next, and what is preventing those solutions from being deployed at a much greater scale. And what we have heard gives me real optimism.

The market is not waiting for a breakthrough. There is already a growing ecosystem of lower-carbon cements and binders, supplementary cementitious materials, optimized mixes, recycled and mineralized aggregates, carbon utilization technologies, precast systems, circular approaches, and emerging material innovations. It is happening right now, we already have options, and the challenge ahead is less about innovation and more about implementation.

Public agencies have tremendous power to accelerate that implementation.

Performance-based specifications can create room for innovation. Coordinated pilots can build confidence among skeptical engineers, contractors, inspectors, and owners. Shared qualification processes can reduce redundant approvals. And coordinated procurement can provide manufacturers and investors with the demand certainty needed to expand regional production and supply.

This is exactly the kind of work USGBC California exists to do: translate innovation into adoption, policy into implementation, and ambitious climate goals into practical change.

The 2028 Games give us an extraordinary deadline and platform, but they are not the finish line. Our opportunity is to build a regional market where lower-carbon concrete becomes increasingly affordable, available, trusted, and the standard solution, creating a model and supply chain that communities throughout California and beyond can replicate.

I want to thank our public-sector partners, the companies and organizations that responded to the RFI, our reviewers and sponsors, and the many leaders helping move this work forward.

The market has shown us what is possible. Now it is up to all of us to create the conditions to bring those solutions to scale. There is a tremendous amount of concrete that will be poured between now and 2028, and yet far more in the decades that follow. We have the opportunity to make the environmental impact and emissions of every one of those pours count less, right now, today. Let's seize that moment and not look back.



A handwritten signature in dark ink, appearing to read 'Ben Stapleton'.

Ben Stapleton
Chief Executive Officer
USGBC California

Published at the Carbon Forward Summit

From RFI to Action

USGBC California released this report on September 17, 2026 at the Carbon Forward Summit, held at the La Kretz Innovation Campus in Los Angeles. One hundred eighty-four public agency staff, manufacturers, designers, contractors, developers, and investors spent the day on a single question: what it will take to build with lower-carbon materials at the scale the 2028 Olympic and Paralympic Games demand.

The findings moved quickly. On October 6, 2026, the Los Angeles County Board of Supervisors is scheduled to consider a motion from Supervisor Lindsey P. Horvath, Advancing Low-Carbon Construction in Los Angeles County, which cites this RFI by name, draws on its findings, and names USGBC California, Metro, the City of Los Angeles, and the City of Long Beach as partners on regional harmonization.

If adopted, it directs County departments to report back within six months with a phased approach for reducing embodied carbon in County-funded construction, including performance-based standards, a qualified products list, and pilot opportunities.



184

ATTENDEES

14

SESSIONS

22

RFI PITCH COMPANIES

11

NZA COMPANIES

11

EXHIBITORS

A full recap of the Summit, including opening remarks, session takeaways, and the companies that presented, begins at **Appendix C, page 48.**

Status as of publication. Board action on the motion was pending at the time of printing.

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Executive Summary

In May 2026, the City of Los Angeles, the City of Long Beach, and the County of Los Angeles—in partnership with USGBC California—issued a Request for Information (RFI) seeking commercially available and emerging lower-carbon concrete solutions. Thirty unique market participants responded, indicating strong industry readiness to deploy lower-carbon concrete alongside barriers to scale that will require coordinated action among public agencies, manufacturers, producers, designers, engineers, contractors, and other market participants.

Greater LA is one of the largest concrete markets in the country, with an estimated 15 to 20 million cubic yards of annual demand—approximately equivalent to filling one Olympic swimming pool every 2 hours.¹ The 2028 Olympic and Paralympic Games (“the 2028 Games”) represent a generational opportunity to transform this market. Local agencies can lead by example by specifying low-carbon concrete across public works projects, including sidewalk replacements, hardscaping, retaining walls, transit infrastructure, and pedestrian realm improvements.

While the 2028 Olympic and Paralympic Games (“the 2028 Games”) are intentionally structured around existing venues, the tangible procurement opportunity lies in targeted public realm, mobility, and streetscape improvements surrounding venue corridors. High-visibility pilot pours across sidewalks, transit stops, and hardscaping offer a platform to transform the concrete market. Operating in parallel with LA28’s overarching sustainability commitments, these small-scale, high-impact projects serve as real-world testing grounds to prove constructability, build engineering confidence, and establish pre-approved mix lists for the broader regional market.

Estimated Concrete in Streetscape and Mobility Projects for the 2028 Olympic and Paralympic Games

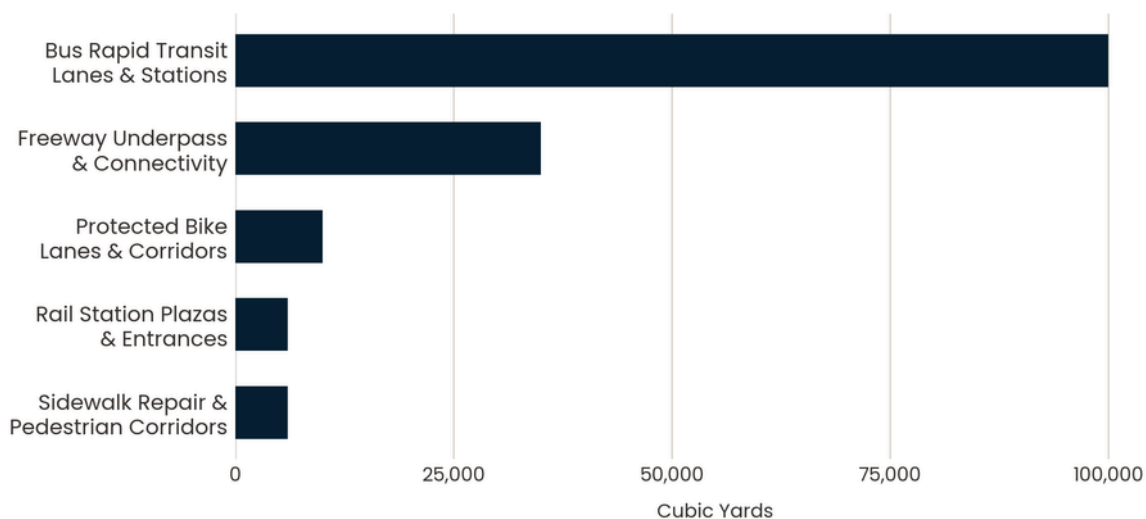


Figure 1. Estimated Concrete in Streetscape and Mobility Projects for the Olympic and Paralympic Games²

¹ Concrete Transition Capital (CTC) estimate for the Los Angeles–Long Beach–Anaheim MSA and USGBC–CA calculation.

² CTC heuristic model, July 2026. No single published figure exists for concrete across 2028 Games preparations; this estimate is from announced scopes, funding allocations and standard civil metrics.

Achieving meaningful embodied carbon reductions in Greater Los Angeles is viable today. Present-day mix designs—suitable for roughly 60% of concrete applications by volume³—can deliver an immediate 25% baseline reduction in Global Warming Potential (GWP—the standardized metric for embodied carbon expressed in kgCO₂e) using readily available commercial inputs. Over a longer horizon, establishing local manufacturing and port logistics for advanced decarbonized raw materials can deepen those reductions up to 55%.⁴

However, scaling these solutions from near-term baselines to long-term potential requires navigating distinct physical and economic trade-offs. Lower-cost options (such as Type II cement and regional SCMs) offer immediate reductions within existing supplier infrastructure, but face physical supply constraints. Conversely, deeper decarbonization solutions carry higher initial costs and require substantial capital investments in new kiln capacity, marine import terminals, and ready-mix silo storage. These are projects requiring at least 24 months for capital approvals, air district permitting, and equipment installation.

Bridging current market capacity to future volume requirements requires synchronizing public policy, standardized specifications, and aggregated procurement signals. Greater Los Angeles has a once-in-a-generation opportunity to align 2028 Games infrastructure with long-term climate strategies, establishing a replicable playbook that accelerates California's clean construction economy while delivering immediate, permanent emissions reductions.

RFI Respondent Landscape

The RFI generated submissions from 29 concrete product-based vendors and one regional trade association. The product respondents comprise 16 material technology providers, three cement manufacturers, six precast/modular producers, an active ready-mix supplier, a software optimization platform, and two structural circularity collaborations. 60% maintain an active California manufacturing presence (*see Appendix A, page 31, for full respondent directory*).

All vendors confirmed strong interest in pilot projects, and many confirmed their readiness to supply lower-carbon solutions immediately. While technology is not a limiting factor, scaling regionally faces market and regulatory bottlenecks. Vendors cited three core barriers:

- **Procurement Fragmentation & Offtake Uncertainty:** Fragmented purchasing across municipalities limits the predictable, multi-year volume commitments necessary to justify supplier capital investments.
- **Industry Adoption & Standardized Specifications:** Entrenched reliance on legacy mix formulations across specifiers, contractors, and code bodies creates a cautious adoption cycle, slowing the deployment of novel lower-carbon mixes.
- **Permitting Timelines:** Facility siting and plant modification approvals have lengthy administrative delays.

³ CTC Building Permit Database for LA + Orange Counties, 2024–2025. 60% of observed concrete volume reflects placements where lower-carbon concretes substitute most easily today (i.e., footings, flatwork, general new construction, patios, and parking).

⁴ CTC estimates.

Key Findings

- 1 Public Pilots Mitigate Perceived Risk:** Municipal pilots can generate field performance and constructibility data that help engineers, specifiers, owners, and contractors evaluate appropriate applications and support broader adoption.
- 2 Immediate Cost Parity:** Lower-carbon concrete solutions are already commercially viable in Greater LA. 79% of reported solutions are said to be available today at or near cost parity (recognizing cost impacts vary by product, application, volume, logistics, performance requirements, and project conditions). At least 10 regional ready-mix plants and 8 concrete masonry unit (CMU) facilities currently offer lower-carbon products matching conventional performance and constructability.
- 3 Align Material Traits with Application Demands:** New forms of Lower Carbon Concrete (LCC) will have different characteristics than Ordinary Portland Cement (OPC) mixes. Understanding these differences before placements and using LCC mixes where their performance is "different better" should be encouraged first.
- 4 Range of Carbon-Displacement + Carbon-Negative Options:** In addition to solutions that reduce or replace the volume of cement in concrete – ordinary portland cement is the largest carbon forcing component of concrete – other solutions like biochar, bio-cements, and mineralized aggregates that include sequestered carbon dioxide can help to achieve net-negative emissions in the end use product. Despite supply limitations and premium pricing that restrict them to specialized projects, these carbon-negative technologies remain valuable tools for deep decarbonization.
- 5 Regional Circularity Supports Embodied Carbon Reduction:** Active regional collaborations demonstrate that construction waste conversion and material reuse are operational today. Municipalities have an immediate opportunity to scale these systems through public works—establishing closed-loop programs where local contractors haul demolished concrete, such as broken sidewalk panels, back to suppliers to be crushed into recycled aggregate for new sidewalks.

Recommended Actions

The Request for Information provides an important foundation for accelerating lower-carbon concrete deployment in Greater Los Angeles through collaboration among public agencies, the cement and concrete industry, architects, engineers, contractors, owners, and other stakeholders. As one of the nation's largest concrete markets, Greater Los Angeles has an opportunity to reduce the embodied carbon of an essential building and infrastructure material while supporting performance, resilience, constructability, supply reliability, and development viability—all while shoring up a key sector of the green economy.

- 1 **Harmonize Regional Standards with Progressive Decarbonization Targets:** Driving lower-carbon adoption across Southern California requires municipal champions to write performance-based, carbon-intensity (GWP) specifications into widely used regional public works standards, specifically the Greenbook. To ensure market transformation without creating immediate procurement bottlenecks, near-term policies should establish achievable baseline reductions for lower-risk applications, paired with a multi-year roadmap of ratcheting targets over time. This clear regulatory trajectory provides suppliers the lead time needed to expand local supply chains beyond conventional fly ash and slag toward emerging alternative binders.
- 2 **Private Market Expansion & Protections:** Amplify the regional market signal by extending these harmonized standards to private development via local building codes, mirroring precedents in Marin County⁵ and Santa Monica⁶, incorporating flexible compliance pathways and supply exemptions to maintain development viability.
- 3 **Launch a Joint Pilot Program & Qualified Products List (QPL):** Execute a coordinated portfolio of municipal pilot pours across transit, sidewalks, and park infrastructure. Successes should feed directly into a regional Qualified Products List (QPL) of pre-approved lower-carbon mixes accessible to all public agencies.
- 4 **Form a Regional Working Group to Bring Lower Carbon Concrete to Scale:** Convene regional stakeholders to drive multi-year strategic investments in port terminals, storage facilities, and local manufacturing. Streamline municipal permitting processes to reduce rollout times for lower-carbon cement and concrete manufacturing facilities.

⁵ County of Marin. Low carbon concrete requirements.

⁶ City of Santa Monica. Low-carbon concrete requirements.

Regional Opportunity & Policy Drivers

Background & Context

Embodied carbon represents the greenhouse gas (GHG) emissions generated across a building material's lifecycle: raw material extraction, manufacturing, transport, assembly, maintenance, and demolition. Unlike operational carbon tied to energy consumption throughout a building's lifespan, embodied carbon occurs upfront, before a building becomes operational. Reducing upfront carbon yields immediate GHG mitigation benefits—an essential step toward meeting near-term climate targets and averting the worst impacts of climate change.

Components of Concrete by Volume

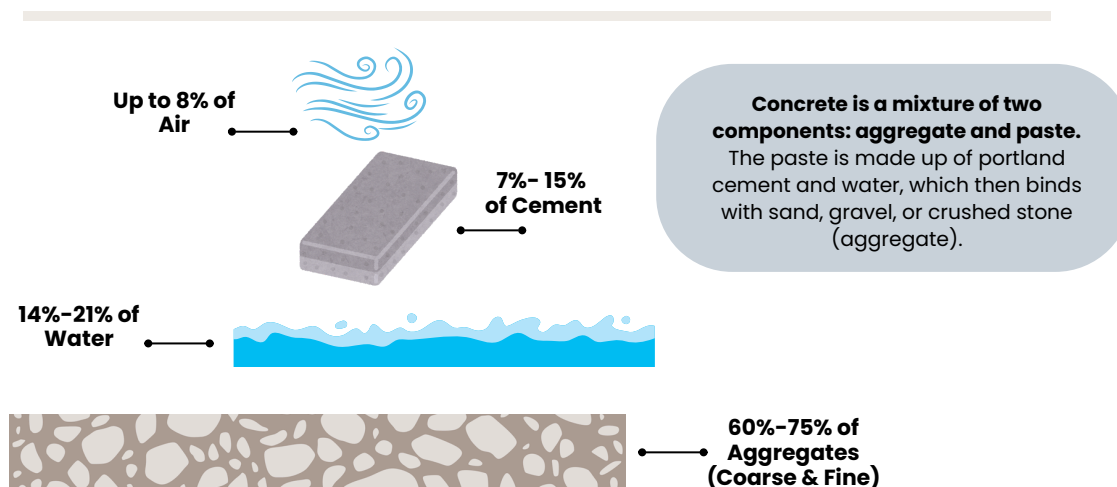


Figure 2. Concrete Components by Volume
(Adapted from American Cement Association)

Concrete can be a significant contributor to construction-related embodied carbon due to its scale of use, with the cementitious binder typically accounting for the largest share of the concrete's embodied carbon (see Figure 2). Cement manufacturing involves producing clinker by heating limestone and other raw materials to approximately 1,400–1,500°C. Clinker production generates CO₂ emissions primarily through limestone calcination and the energy required to heat the kiln. Cement production accounts for roughly 8% of global GHG emissions and 2% of statewide GHG emissions⁷ (as California is a net importer of cement).⁸

⁷ World Economic Forum, 2024.

⁸ California Air Resources Board. 2000–2023 GHG Inventory (2025 Edition).

Using Less Ordinary Portland Cement (OPC)

- 1 Supplementary Cementitious Materials (SCMs):** partially replace traditional cement clinker used in concrete mixes with industrial byproducts or natural mineral pozzolans, which act like cement when mixed with water and traditional cement. Common options include slag and fly ash— byproducts of steelmaking and coal combustion—as well as calcined clay, volcanic ash, ground limestone, and recovered cement paste from demolished structures. This is currently the most widespread and cost-effective decarbonization path, as many SCMs cost less per ton than imported Portland cement.
- 2 Alternative Binders:** Bypassing conventional limestone calcination, alternative cements such as calcium silicate or magnesium silicate rather than calcium carbonate (limestone). Because they rely on non-carbonate raw materials, they avoid calcination emissions.

Decarbonizing the OPC Manufacturing Process

- 1 Plant Electrification & Fuel Switching:** Cement plants can lower emissions by integrating waste heat recovery, utilizing carbon-free electricity for pre-heating, and substituting low-carbon fuels (such as biomass or hydrogen) to reach required kiln temperatures.
- 2 Carbon Capture, Utilization, and Storage (CCUS):** CCUS technologies capture flue-gas CO₂ to permanently sequester it—either through geological storage, conversion into carbon-negative aggregates, or direct injection into fresh concrete mixes. While offering massive abatement potential, cement plant retrofits for carbon capture carry high capital costs.

Concrete Circularity & Aggregate Strategies

- 1 Recycled Concrete Aggregates (RCAs):** Replacing virgin gravel and crushed stone with processed construction and demolition waste. While highly effective for resource conservation and material circularity, its contribution to embodied carbon reduction is comparatively modest.
- 2 Synthetic/Mineralized Aggregates:** Manufacturing artificial aggregates by combining captured CO₂ with calcium sources to form synthetic limestone.
- 3 Component Salvage & Deconstruction:** Disassembling structures intentionally at end-of-life to recover intact structural elements—such as precast concrete panels, beams, or blocks—for direct reuse in new building projects.

State and Local Policy Context

State and local policies are already aligning to shift municipal procurement towards lower-carbon materials.

- At the State level, the **Buy Clean California Act (BCCA)**, established by Assembly Bill (AB) 262 in 2017, established maximum Global Warming Potential (GWP) limits for State-funded infrastructure projects, requiring facility-specific Environmental Product Declarations (EPDs) detailing the carbon footprint for key materials including structural steel, concrete reinforcing steel, flat glass, and insulation—but not concrete. BCCA provides the framework for municipal EPD requirements.
- With Senate Bill (**SB**) 596 in 2021, the California Air Resources Board was directed to develop a comprehensive strategy for the cement sector in California to achieve a greenhouse gas emissions intensity 40% below baseline levels by 2035 and net-zero GHG emissions by 2045. This was followed by **AB 2446** in 2022, directing CARB to develop a comprehensive framework for measuring and reducing the carbon intensity of the state’s building materials, with a target of 40% reduction by 2035. **AB 43** expanded this mandate by granting CARB authority to evaluate and establish an embodied carbon trading system.
- In 2020, the **City of Los Angeles** was the first municipality to adopt BCCA requirements for tracking and reducing embodied carbon from construction materials in municipal capital projects.⁹ In 2022, the Bureau of Engineering updated this policy to include concrete as an eligible material, with additional revisions in 2026.¹⁰
- In 2024, the **City of Santa Monica** adopted Ordinance #2778, establishing Global Warming Potential (GWP) limits and cement reduction mandates for concrete poured in all newly constructed private and public buildings, spas, and pools.
- As of July 1, 2024, **CALGreen** (Title 24, Part 11), the State’s green building code, mandates embodied carbon reductions for commercial non-residential projects and school projects of 50,000 square feet or larger (the threshold for commercial non-residential projects decreased from 100,000 to 50,000 square feet on January 1, 2026). Covered projects must comply through one of three pathways: building reuse, performance-based assessment, or prescriptive material limits via Environmental Product Declarations (EPDs).
- In 2025, the **County of Los Angeles** updated the OurCounty sustainability plan to include an action for the Public Works department to “Expand use of sustainable building materials for County projects, including recycled and repurposed material, low-carbon concrete alternatives... and locally-sourced materials.”

⁹ Natural Resources Defense Council. 2020.

¹⁰ Special Order 03-0222 and Special Order 01-0226, respectively. Available online.

About the RFI and Responses

In May 2026, the City of Los Angeles, City of Long Beach, and the County of Los Angeles, in partnership with USGBC California, issued a Request for Information (RFI), seeking information from manufacturers, ready-mix suppliers, precast producers, material innovators, and construction industry partners on commercially available and emerging lower-carbon concrete solutions. Closed on July 7, 2026, the RFI generated 30 unique submissions.¹¹ The respondents represent a diverse cross-section of firms whose scale spans from early-stage startups to century-old industrial producers.

Organized by operational categories, the respondent pool includes 16 material technology providers developing alternative binders, biochar, synthetic aggregates, and admixtures, alongside precast producers, software platforms, and trade associations. While these early-stage companies represent a numerical majority (>50% of respondents), their current market footprint and production volumes remain modest. Conversely, primary cement producers (3) and ready-mix suppliers (1) account for a smaller share of responses, yet control the overwhelming majority of regional supply volume and infrastructure. Precast, masonry, and modular product manufacturers also submitted responses, while the remaining respondents reflect specialized links across the supply chain, including: an equipment and infrastructure solutions provider, a software optimization developer, a structural concrete reuse collaboration, and a regional trade association offering policy guidance.

RFI Respondents by Type

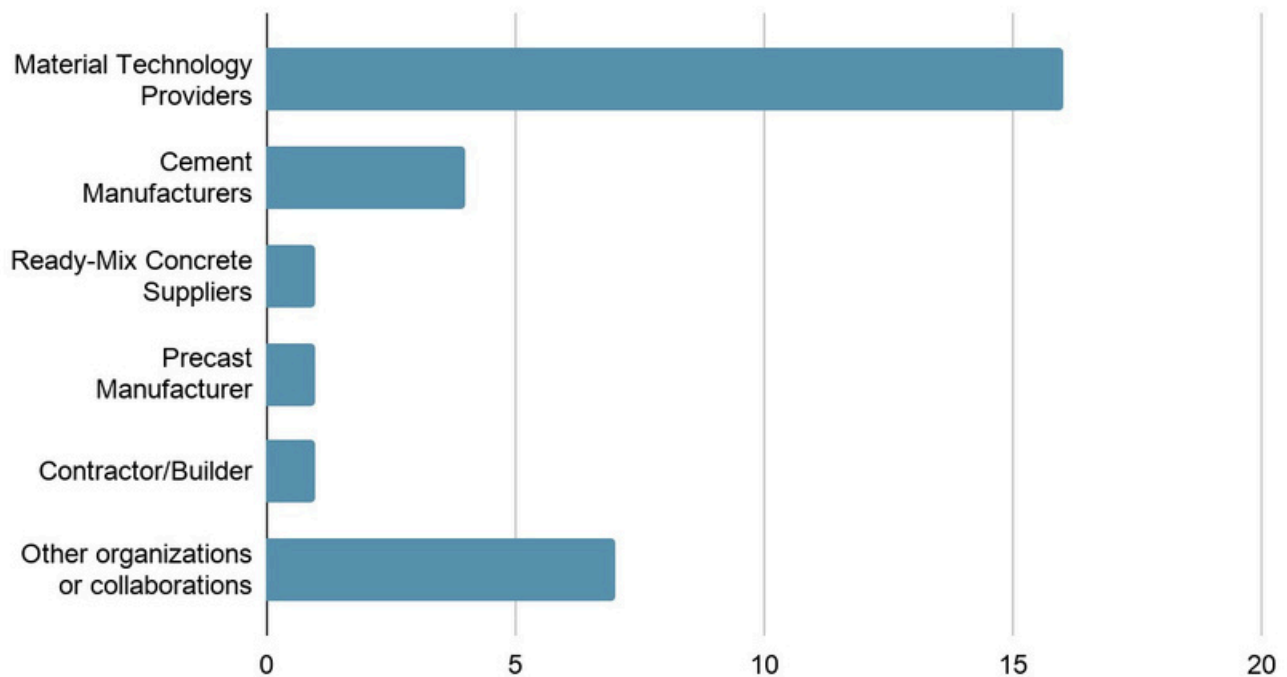


Figure 3. Respondents by Type (Self-Identified)

¹¹ Excluded from this count is one incomplete submission and a second submission from a firm offering both lower-carbon concrete products and zero-emission equipment (the latter is excluded).

RFI Respondent Contacts

All 30 verified RFI respondents are listed below, with a point of contact for each. USGBC California is glad to make introductions for project teams looking to source lower-carbon concrete in Greater Los Angeles.

Profiles for all respondents, including organization type, product, cost category, and capability statement, appear in Appendix A: Respondent Directory, on page 31.

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LA28 Structural Concrete Reuse Collaboration / [RE]CAST

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Deployment Readiness, EPDs, and Regional Capacity

Evaluating lower-carbon concrete for Greater Los Angeles public works requires looking beyond material science to assess practical jobsite execution, regulatory data standards, pricing economics, production and supply chain capacity. Lower-carbon concrete solutions must be reliably produced and batched, transported, placed, finished, and cured within project requirements while meeting applicable public agency engineering and performance standards. This section synthesizes self-reported operational parameters across the 30 verified RFI respondents across four core dimensions.

1. Compatibility with Conventional Practices:

Self-reported jobsite handling by RFI respondents suggests low operational friction for public works adoption across municipal project types:

- **Compatible (22 responses)**: Nearly three-quarters of respondents report compatibility with standard construction practices. These solutions can be batched, pumped, poured, and finished using standard crew tools, transit mixers, and conventional forms with minimal workflow changes.
- **Minor Modifications Required (7 responses)**: Roughly one-quarter of respondents utilize standard jobsite equipment but require minor operational adjustments—such as subgrade drainage layer preparation, dry-stack unit alignment, specialized form bracing, or internal vibration at high dosage rates.

Compatibility with Conventional Practices

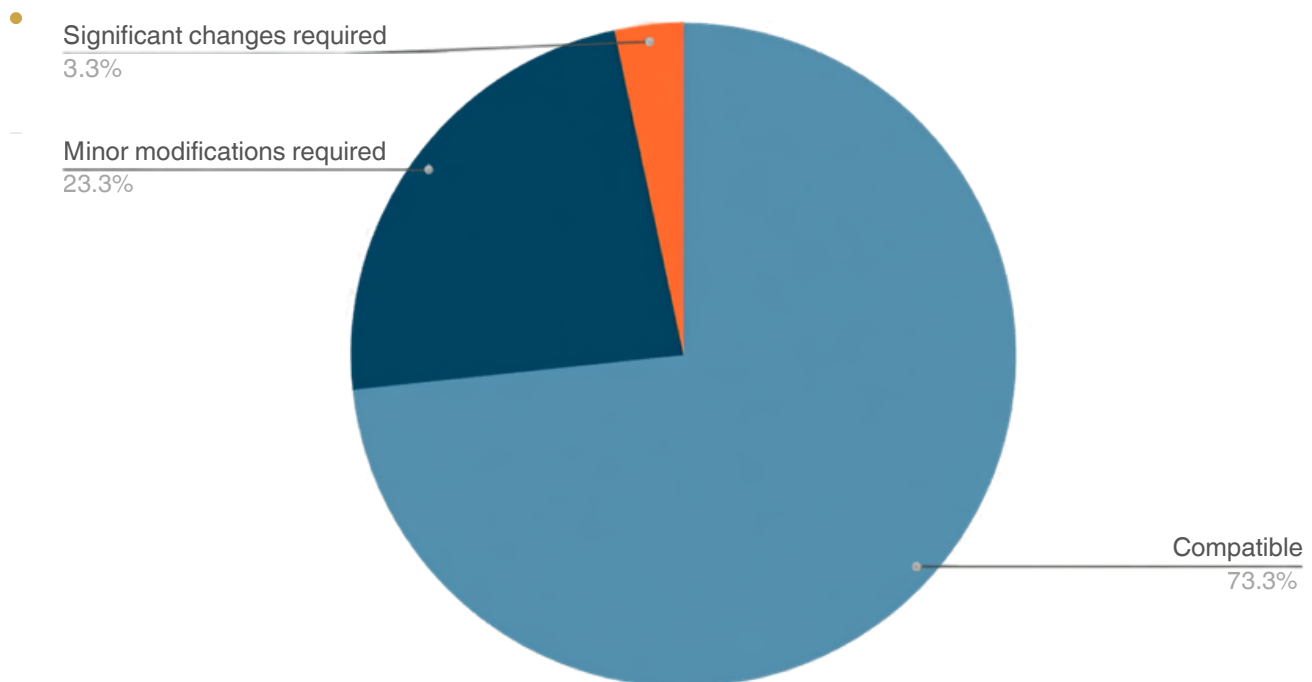


Figure 4. Compatibility with Conventional Practices (Self-Reported)

2. Environmental Product Declaration (EPD) Availability

Environmental Product Declarations serve as third-party audited data sources that quantify the Global Warming Potential (GWP) of concrete products per cubic yard. These standardized Life Cycle Assessments (LCAs) enable public agencies to establish performance-based carbon thresholds without dictating specific mix chemistries:

- **Facility-Specific EPDs** (2 Firms): Audited, plant-level declarations reflecting exact manufacturing operations from two regional producers.
- **Product-Specific EPDs** (14 Firms): Independently verified lifecycle assessments providing published GWP data for specific product lines, cement types, or mix families.
- **No EPD / In Progress** (14 Firms): Early-stage technologies currently modeling lifecycle impacts, completing testing protocols, or pursuing third-party verification to support future municipal procurement.

Respondents by Environmental Product Declaration (EPD) Status

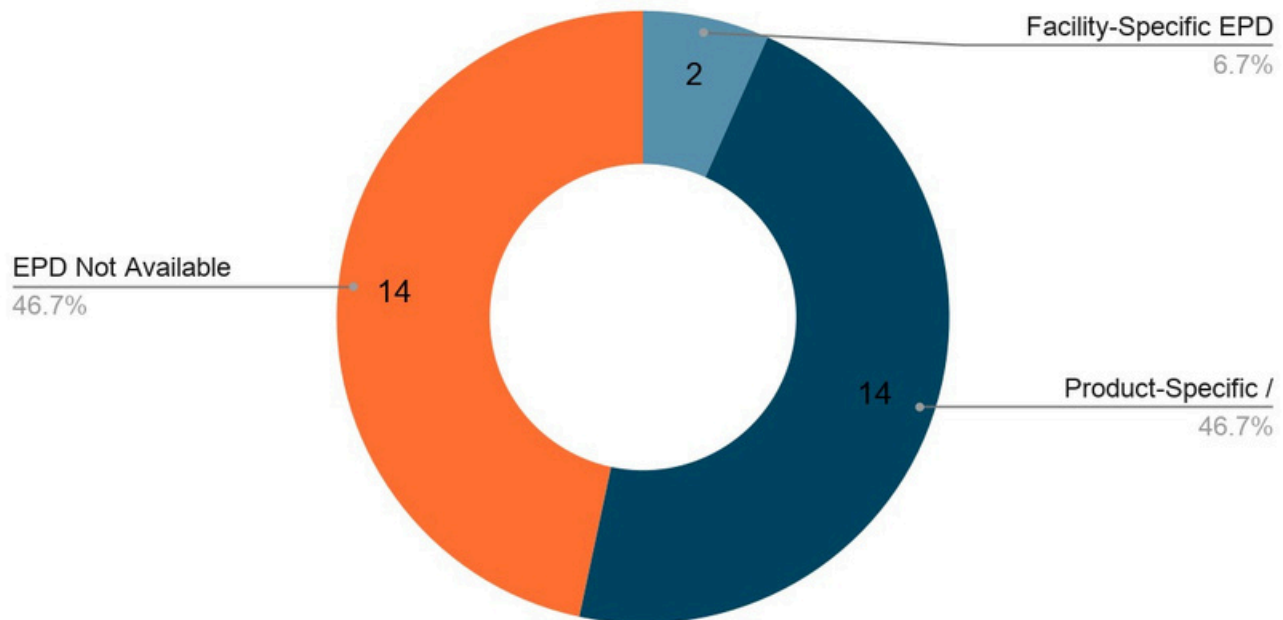


Figure 5. Respondents by Environmental Product Declaration (EPD) Status

3. Financial Drivers & Pricing Economics

Self-reported survey findings suggest that lower-carbon concrete is broadly cost-competitive today, with the vast majority of respondents projecting material prices at or near conventional baselines. However, these figures carry an important caveat: more than half of the surveyed producers represent novel material developers who have yet to deploy their products at full commercial scale. While their early-stage pricing estimates provide an optimistic benchmark, true market costs will only crystallize as these suppliers transition from pilot-scale production to full industrial output.

- **Cost Parity or Lower Cost** (18 Firms): Immediate cost parity or material savings driven by cement volume reduction, localized construction and demolition (C&D) waste processing, or eliminated footing earthwork.
- **Slight Premium (<10%)** (5 Firms): Incremental material cost increases that fall within standard municipal contingency margins, bringing the combined cost-viable market share to 76.7%.
- **Moderate Premium (10–25%)** (6 Firms): Higher upfront costs driven by specialized biochar additives, novel biogenic binders, or initial pilot-scale precast manufacturing.
- **Significant Premium (>25%)** (1 Firm): Applied specifically to deep-decarbonization carbon capture attribute certificates.

Beyond material production, a competitive price at the plant gate does not always translate to a cost-neutral project. In practice, the primary source of cost escalation occurs during handling and installation. Ready-mix batch plants routinely charge special handling fees for non-standard SCMs or novel additives to cover dosing complexity, extended mixing times, and/or dedicated silo space. By contrast, pre-blended products carry lower cost-escalation risk because they leave the ready-mix plant priced like standard cement. Downstream, placement contractors may pad their bids with extra labor and risk buffers to hedge against unfamiliar set times or delayed finishing windows.

The silver lining is that these downstream premiums represent transitional friction rather than permanent cost barriers. Because raw inputs are already entering the supply chain at or near price parity, the markups associated with specialized handling and contractor risk will naturally erode as batch plants standardize dosing protocols, placement crews build field experience, and market volumes scale.

4. Regional Manufacturing Capacity

Securing lower-carbon concrete for Greater Los Angeles public works requires evaluating real-world manufacturing footprints, logistics corridors, and industrial capacity. Southern California represents one of the largest concrete markets in the nation, consuming an estimated 15 to 20 million cubic yards of ready-mix concrete¹² and roughly 6 million tons of cement¹³ annually. Achieving long-term climate targets depends on strengthening the region's physical supply chain. Respondents reported their regional presence across four geographic tiers:

- **Greater Los Angeles (9 Firms):** Direct manufacturing, batching, block production, or chemical processing facilities operating inside the basin for immediate municipal specification.
- **Rest of California (9 Firms):** Regional production and processing plants supplying the LA market via short-haul transport networks.
- **Rest of West Coast (3 Firms):** West Coast suppliers leveraging regional rail corridors, marine terminals, and distributed installer networks.
- **National / International (9 Firms):** Technology developers scaling national supply chains or pursuing local licensing partnerships.

¹² CTC, 2024 estimate for the Los Angeles–Long Beach–Anaheim metropolitan statistical area (MSA)

¹³ U.S. Geological Survey (USGS), [National Minerals Information Center](#). Cement Statistics and Information: Monthly Mineral Industry Surveys & Minerals Yearbook (Volume II: Area Reports — Domestic: California).

Respondents by Geographic Presence

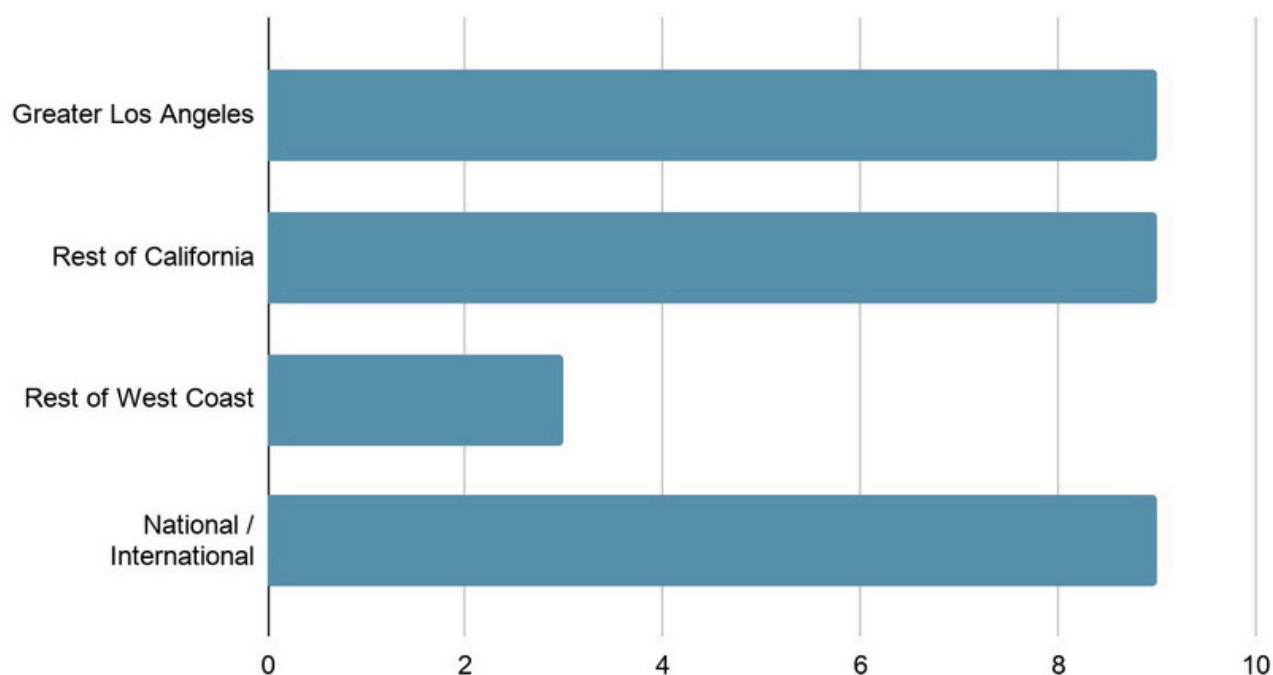


Figure 6. Respondents by Geographic Presence

Because respondents report production across disparate volumetric units (tons of cementitious binder, cubic yards of ready-mix, precast units, liquid gallons), raw capacity cannot be aggregated into a single total without double-counting. Furthermore, regional capacity constraints directly depend on the performance baseline defined for "low-carbon concrete." For modest reduction targets (10–20%), established commercial inputs—such as Type II cements and LC3 blended cements—likely possess sufficient regional capacity to meet projected 2028 Games infrastructure¹⁴ demand.

However, relying solely on legacy SCMs meets short-term needs without driving supply-chain innovation. To achieve deeper decarbonization, emerging alternative binders—currently operating at pilot scales (10,000 to 50,000 tons annually)—require explicit targets and guaranteed municipal offtake commitments. Final capacity mapping remains contingent on establishing formal GWP reduction targets and reconciling infrastructure volume projections with regional partners.

¹⁴ CTC estimate.

Market, Technical, and Financial Barriers to Scale

While market interest is high and commercial solutions exist today, respondents identified an interconnected web of barriers that slow deployment. These challenges stem from conservative engineering traditions, rigid specifications, physical supply chain limits, complex facility permitting, workforce familiarity, carbon accounting hurdles, and market uncertainty.

Technical, Risk, and Code Constraints

Public works specifications across Greater Los Angeles have historically relied on prescriptive mix designs mandating high minimum quantities of conventional Portland cement per cubic yard. Another major technical bottleneck is the near-universal reliance on 28-day compressive strength acceptance windows. Traditional Portland cement gains strength rapidly, whereas mixes with high SCM substitution often may hydrate more slowly, reaching design strength at 56 or 90 days. When not impacting project schedules, enforcing rigid 28-day testing penalizes lower-carbon mixes that perform exceptionally well over an asset's 75- to 100-year design life. Furthermore, specification fragmentation across adjacent cities forces ready-mix suppliers to maintain separate, custom-approved mix designs for different jurisdictions, driving up plant overhead.

Critically, these technical barriers are compounded by asymmetric risk allocation across the construction value chain. When novel or alternative cements are required through codes or public procurement mandates, material producers hold the ultimate liability for field performance. Because the cost of removing and replacing failed concrete is exceptionally high, suppliers and producers tend to default to conservative, proven mix designs. Accelerating the deployment of novel binders requires addressing this financial exposure.

Financial Drivers & Lifecycle Economics

Pricing data reveals that baseline lower-carbon concrete mixes for 2028 Games projects are broadly cost-competitive today at the basic material costs. Nearly 80% of surveyed suppliers claim to offer materials that fall within standard project contingency margins, driven by reduced cement content, localized construction and demolition (C&D) waste processing, or eliminated footing earthwork.

- **Cost Parity or Lower Cost:** 17 respondents achieve immediate cost parity or lower material costs compared to traditional mixes. This group includes mix design optimization, Type II and LC3 blended cements, industrial SCM replacements (slag, fly ash, ground glass), C&D recycled concrete aggregates, and modular foundation-eliminating wall systems.
- **Near Cost Parity / Slight Premium:** 4 respondents offer materials carrying a slight premium under 10%. Biochar additives, microalgae bio-cements, colloidal silica finishing aids, and circular polymer sand replacements fall into this band.
- **Moderate Premiums:** 7 respondents carry 10–25% premiums driven by limited regional production scale, specialized biogenic binders, or early-stage precast assembly workflows (e.g., permeable micro-pore concrete, dry-stack plastic units, hemp masonry, and structural element reuse protocols).
- **Significant Premiums:** 1 respondent noted significant premiums (>25%) specifically for deep-decarbonization carbon capture and storage (CCS) attribute certificates.

Products by Cost Relative to Conventional Concrete

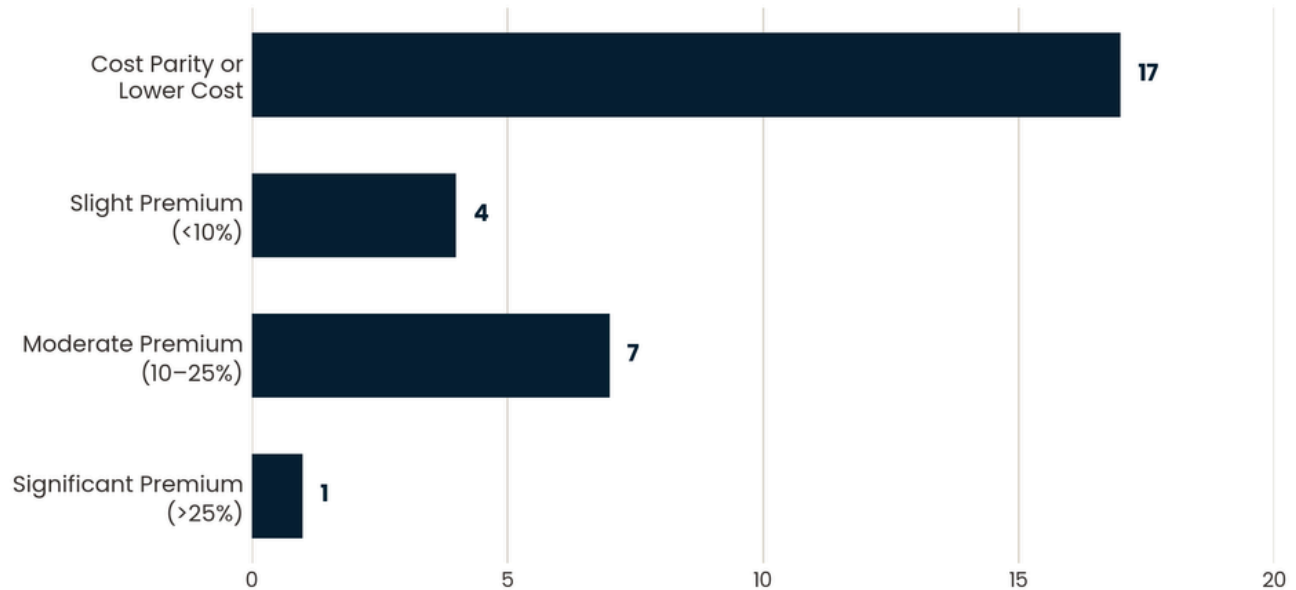


Figure 7. Products by Self-Reported Cost Relative to Conventional Concrete¹⁵

Importantly, the above figures reflect immediate, pilot-scale availability rather than total market capacity. Expanding these material targets from targeted 2028 Games projects to full market adoption will require substantial capital investment in regional supply infrastructure. The same holds true for deepening decarbonization goals: moving from an initial 30% GWP reduction to 50% and beyond demands expanded local processing and storage capacity to maintain price stability at scale.

¹⁵ Excludes any added costs beyond basic material supply to a ready-mix plant.

Supply Chain & Infrastructure Limits

Scaling lower-carbon concrete across Southern California is physically constrained by raw material availability and local industrial infrastructure—there is only one local slag processor, for example. The phase-out of coal-fired power plants across the Western United States has decarbonized electricity but severely reduced traditional fly ash supplies, leaving Greater Los Angeles with zero active local fly ash sources. While select suppliers leverage calcined clay deposits sourced and processed directly within Los Angeles County, broader regional supply relies on importing fly ash, slag, calcined clays, and harvested pozzolans via long-distance rail and maritime freight, exposing local supply chains to regional transport bottlenecks and cost volatility. At the ready-mix plant level, many facilities were built with only two or three storage silos (historically reserved for standard cement and fly ash). While some producer locations have added capability, not all producers can stock and dispense multiple lower-carbon binders simultaneously. Storing additional blended cements, calcined clays, or ground glass requires capital retrofits for auxiliary silos.

Regulatory & Permitting Lead Times

For innovators seeking to establish new manufacturing facilities, calcined clay kilns, or mineral processing plants within California, local permitting processes introduce timeline delays and financial risk. Developing industrial facilities in Southern California requires navigating multi-year environmental reviews under the California Environmental Quality Act (CEQA), alongside stringent air quality permitting through the South Coast Air Quality Management District (SCAQMD). Discretionary land-use and zoning approvals, conducting thorough community engagement, and utility infrastructure connections (such as high-voltage electrical grid upgrades) typically require a 3–5 year development window, creating lead time between initial capital investment and commercial material availability.

Investment Certainty

Finally, scaling next-generation materials requires substantial capital investment, which is inherently tied to demand certainty. Developing new binder facilities, expanding processing yards, or retrofitting ready-mix batch plants requires significant upfront capital. However, private investors and commercial lenders are reluctant to finance these capital-intensive projects without guaranteed, long-term market demand. Public agencies rarely provide long-term procurement commitments or aggregated multi-year purchasing volume guarantees. Without predictable public sector demand or dedicated grant funding for municipal pilot projects, material innovators face a "valley of death"—where validated, low-carbon technologies struggle to secure the growth capital needed to transition from pilot-scale demonstrations to full commercial production.

Recommendations and Regional Roadmap

The RFI findings demonstrate that Greater Los Angeles possesses an established cement and concrete industry actively advancing lower-carbon solutions. Translating vendor capabilities and existing technical expertise into widespread adoption requires moving past fragmented, project-by-project approvals toward a unified regional strategy. By aligning policy frameworks, streamlining permitting, engaging industry technical experts early, and establishing clear procurement demand, local public agencies can transform civic infrastructure while honoring project-specific engineering, strength, and durability requirements.

To deliver immediate climate benefits while building long-term industrial capacity, regional action should focus on three foundational action pillars, building upon existing industry expertise, standards, EPD infrastructure, and ongoing investments while focusing on barriers to broader adoption. These pillars should be supported by the convening role of USGBC California and a phased rollout schedule through 2030.

Core Regional Recommendations

Pillar 1: Modernize Specifications and Adopt Performance Standards

Public agencies across Greater Los Angeles should harmonize public works specifications around carbon-intensity limits. Adopting maximum Global Warming Potential (GWP) thresholds (measured in kgCO₂e/yd³), based upon regional material supplies as they exist today, allows local and regional agencies to aggregate regional demand, simplify reporting, and empower suppliers to optimize mix designs using blended cement, supplementary cementitious materials (SCMs) and advanced admixtures.

- **Establish Top-Level Agency Policies:** Formal policy adoption, such as city council ordinances and agency board mandates, provides local public works engineers with the explicit mandate needed to modernize legacy specifications. While engineering teams manage day-to-day mix approvals and testing, top-down policy adoption removes liability concerns, overrides rigid cement minimums, and gives ready-mix suppliers the multi-year demand certainty required to invest in local low-carbon supply infrastructure.
- **Modernize Public Specifications and Procurement Practices:** Coordinate specifications across City and County public works departments, regional transit authorities (LA Metro), port and airport authorities (Port of Long Beach, Port of Los Angeles, LAWA), regional utility providers (LADWP, MWD, LA County Sanitation Districts), and Caltrans to establish shared, performance-based carbon targets across all local public works specifications. Aligning procurement rules across these entities creates a unified regional market signal, simplifies approvals for ready-mix suppliers, and allows batch plants to produce standardized low-carbon mixes for all public capital projects throughout the LA Basin. Greater consistency across agency requirements and approval processes can reduce unnecessary barriers while preserving producer flexibility and project-specific engineering.

- **Engage Industry Expertise Early in Policy Development:** When procurement policies, specifications, codes, or other requirements affecting cement and concrete are being considered, engage manufacturers, producers, engineers, industry associations, and appropriate technical organizations early in the process. Regional initiatives should leverage established industry standards, technical frameworks, and industry expertise to ensure policies remain technically viable and avoid creating duplicative systems.
- **Allow Later-Age Strength Acceptance:** Update municipal acceptance rules to permit 56- or 90-day compressive strength testing for non-urgent structural elements, mass footings, and flatwork. This allows lower-carbon mixes to gain strength naturally over time without requiring expensive chemical accelerators. One functional solution to this is to simply adjust project specifications to say: meets design strength (f'c) at times established within project specific schedule requirements. If none are specified, 28-day strength criteria shall be used.
- **Expand to Private Construction via Building Codes:** Mirror pioneering California frameworks—such as the low-carbon concrete building codes enacted in Marin County and Santa Monica—by expanding GWP performance standards into local building codes. Extending these requirements to private non-residential development amplifies the market signal across the LA Basin while creating a level playing field for suppliers and builders.
- **Protect Project Viability:** Policy rollouts must incorporate clear compliance flexibility, including cost-variance caps, supply availability exemptions, emergency repair carve-outs, and early-strength performance exceptions.

Pillar 2: Launch a Joint Pilot Program & Qualified Products List (QPL)

Agencies should execute a coordinated portfolio of municipal pilot pours to build engineering confidence, train field crews, and establish a shared approval pipeline. Pilots for lower-risk applications should establish progressive decarbonization targets—ratcheting from baseline reductions toward ambitious 50%+ GWP targets over time—and explicitly incentivize novel alternative binders beyond conventional fly ash and slag to expand the regional supply chain. This pipeline should also leverage the UC Davis “[Lab2Slab](#)” program which provides a step-wise testing framework to validate material durability and constructability under real-world conditions.

- **Targeted Pilot Portfolio:** Deploy demonstration pours across sidewalks, curbs, gutters, park pathways, utility trench caps, retaining walls, and streetscapes surrounding 2028 Games venue corridors. Low-risk flatwork provides immediate testing grounds, while factory-controlled precast (such as sound walls, drainage culverts, and masonry units) and high-load structural pours (such as transit guideways and footings) can follow structured validation pathways.
- **Site-Specific Mock-Ups:** Incorporate project-specific test placements prior to final project execution to reduce real and perceived performance risks. These mock-ups provide essential on-the-job training for field crews and verify contractor compliance under controlled, lower-risk conditions before full-scale pours begin.

- **Regional Education & Stakeholder Convening:** Utilize USGBC California's regional network to bridge the gap between public policy goals and industry execution by hosting technical workshops and creating opportunities for architects, owners, developers, contractors, sustainability professionals, and public agencies to engage directly with cement and concrete manufacturers, producers, and technical experts. Greater industry engagement can build understanding of available lower-carbon solutions, performance requirements, regional material considerations, and practical pathways for reducing carbon on real projects.
- **Showcase Proven Solutions and Industry Progress:** Use successful projects, case studies, project tours, and educational programs to showcase lower-carbon solutions already being deployed, sharing real-world lessons on performance constructability, and availability.
- **Multi-Agency Qualification Pathway:** Establish a joint technical review panel—combining engineers from the City of Los Angeles, City of Long Beach, City of Santa Monica, County of Los Angeles, and port and regional transit agencies—to evaluate vendor submittals once for multi-agency approval.
- **Regional Qualified Products List (QPL):** Pilot successes should feed directly into a centralized QPL of pre-approved lower-carbon mix designs, alternative binders, and mineralized aggregates. Once listed (with test results), pre-qualified mixes can be specified immediately by any participating public agency without redundant jobsite testing.

Pillar 3: Form a Regional Working Group to Bring Lower-Carbon Concrete to Scale

To address long-term supply constraints and regional logistics bottlenecks, agencies should convene a dedicated regional working group comprising public works leaders, port authorities, rail operators, ready-mix producers, concrete contractors, clean-tech developers, finance professionals, and labor representatives.

- **Support Bulk Import and Storage Infrastructure:** Address Southern California's local SCM shortages by coordinating strategic investments in marine import terminals (Ports of LA and Long Beach), bulk rail transload facilities, and ready-mix plant silo retrofits.
- **Streamline Industrial Permitting:** The working group must pursue structural permitting pathways—such as dedicated inter-agency review teams, programmatic EIRs, CEQA streamlining for low-carbon manufacturing, and early alignment with South Coast AQMD and AB 617 community frameworks—to provide clear schedules and execution certainty for new calcined clay plants, alternative cement facilities, and mineral processing sites.
- **Aggregate Public and Private Demand:** Aggregate multi-year project pipelines across participating agencies to provide the long-term volume guarantees needed for material innovators to secure private growth capital and scale local production.

Phased Implementation Roadmap (2026–2030)

Executing recommendations requires a structured, multi-year schedule that prepares the market for pre-Olympic infrastructure needs while laying the groundwork for post-2028 industrial scale.



Figure 8. Conceptual Emissions Reduction Roadmap

2026: Policy Foundation & Standardization

Lead jurisdictions (City of Long Beach, City of Los Angeles, County of Los Angeles) enact formal lower-carbon concrete policies establishing baseline GWP limits and performance-based mix specs. Following the RFI Report's release, USGBC California convenes the Regional Lower-Carbon Concrete Working Group to standardize EPD verification protocols, carbon accounting rules, and regional GWP baselines. Working group members identify initial low-risk pilot locations—such as sidewalks, curbs, and park trails—across participating agencies while initiating harmonization discussions for material specifications.

2027: Pilot Deployment

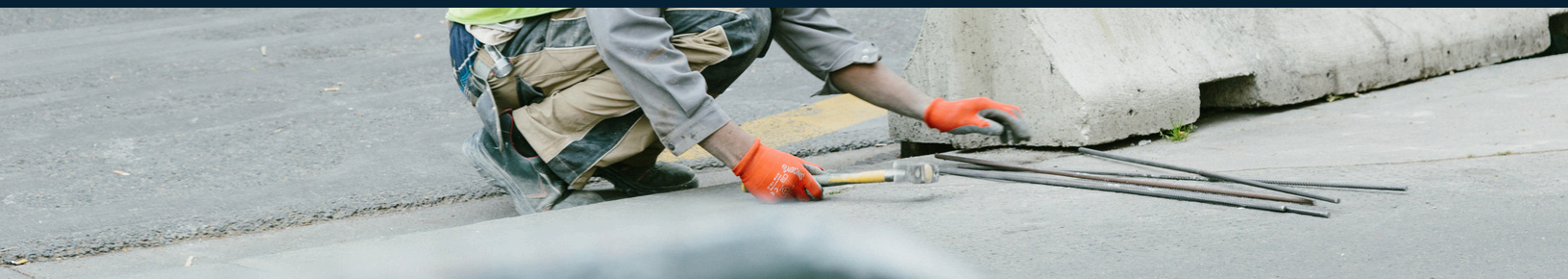
Participating cities, counties, and transit agencies mandate lower-carbon performance specs across all public capital contracts. The working group launches a centralized Qualified Products List (QPL) to streamline multi-agency submittals for pre-approved mixes and alternative binders. Joint municipal demonstration pours deploy across sidewalk, park, and transit infrastructure. The working group drafts model lower-carbon building code ordinances for private non-residential development.

2028: Olympic Showcase & Market Scale-Up

Crews complete lower-carbon streetscape and hardscape pours along 2028 Olympic and Paralympic Games venue corridors under fully institutionalized specs. Commercially available solutions achieve broad adoption across public capital works, and the Working Group publishes comprehensive evaluation data alongside municipal case studies. As central convener, USGBC California hosts the **LA28 Clean Infrastructure Summit** during the Games to publish regional pilot data, highlight supply-chain milestones, and showcase Greater Los Angeles's clean construction playbook on the global stage.

2029–2030: Institutionalization & 1M-Ton Lower-Carbon Cement Target

Procurement networks absorb output from newly commissioned SCM processing facilities, calcined clay kilns, and alternative binder plants. This influx supports placing 1,000,000+ tons of lower-carbon cement annually across Greater LA, enabling agencies to enforce progressively lower GWP caps. The initiative releases a replicable *Municipal Lower-Carbon Concrete Playbook* for adoption by peer jurisdictions across the nation.



Conclusion: Building a Clean Construction Legacy

Greater Los Angeles does not need to wait for a single breakthrough technology or distant scientific discovery to begin decarbonizing its built environment.

The findings of this Request for Information demonstrate that a diverse, capable, and highly motivated supply base for lower-carbon concrete is operational across Greater Los Angeles today. From ready-mix optimization and commercial drop-in cements to advanced carbon mineralization and emerging alternative binders, the region's material producers possess the technical capability needed to significantly reduce the embodied carbon of its civic infrastructure immediately.

Unlocking this market at scale requires moving beyond isolated successes and project-by-project exceptions to establish more balanced risk alignment. Because concrete performance carries long-term structural responsibility, material producers and engineers naturally approach novel formulations with prudent caution. Transforming low-carbon concrete into standard practice requires coordinated leadership across public agencies, venue operators, material manufacturers, structural engineers, and trade contractors. Together, these partners can establish clear performance-based standards, standardize environmental reporting, launch collaborative pilot programs, and aggregate public demand—providing local producers with the confidence, shared risk frameworks, and market certainty needed to invest in long-term supply infrastructure.

The upcoming 2028 Olympic and Paralympic Games offer a once-in-a-generation platform to showcase Southern California's commitment to sustainable infrastructure. However, the ultimate vision extends far beyond a single event. This global event serves as a vital catalyst to accelerate policy adoption, modernize public works specifications, and align regional logistics corridors.

The market has proven it is ready to deliver. The task now facing the City of Los Angeles, County of Los Angeles, City of Long Beach, and regional infrastructure partners is to turn these proven solutions into routine engineering practice—ensuring that the clean construction legacy established today delivers a more resilient, lower-carbon, and sustainable built environment for generations to come.

Appendices

Supporting material for the findings and recommendations in this report: who responded and what they offer, the questions they answered, a record of the Summit where the report was released, and definitions for the terms used throughout.

A**Appendix A. Respondent Directory****31**

Profiles for all 30 verified respondents, including self-identified organization type, product or solution, cost category, and capability statement, plus a point of contact for each.

B**Appendix B. RFI Questions****39**

The full set of questions issued in the May 2026 Request for Information, covering organization type, products, cost, capacity, and deployment readiness.

C**Appendix C. Carbon Forward Summit Recap****48**

A 13-page record of the September 17, 2026 Summit where this report was released: opening remarks, session takeaways, the companies that presented, and photos from the day.

D**Appendix D. Glossary of Terms****61**

Definitions for the technical, policy, and material terms used throughout this report, from alkali-silica reactivity to supplementary cementitious materials.

Appendix A. Respondent Directory

The directory entries contained in this section were compiled from voluntary submissions to the May 2026 Low Carbon Concrete Request for Information (RFI) issued by the City of Los Angeles, City of Long Beach, County of Los Angeles, and USGBC California.

Please note that inclusion in this directory does not constitute an endorsement, recommendation, or approval by the municipal partners or USGBC California. The respondents are presented in alphabetical order.

1. AggrePlex of Modesto LLC

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** PozzoDyne™ Ground Glass Pozzolan
- **Product Description:** Micronized ground glass pozzolan produced from post-consumer recycled glass to replace Portland cement.
- **Contact Information:** Will Cialone, VP Strategy | will@aggreplex.com

2. Angelus Block Company Inc.

- **Self-Identified Organization Type:** Precast, Masonry & Modular Product Manufacturer
- **Product or Solution Name:** Carbon-Neutral Concrete Masonry Units (CMUs)
- **Product Description:** Concrete masonry units manufactured with Type II cement, high SCM replacement, and CO₂ mineralization.
- **Contact Information:** Adam Eldred | aeldred@angelusblock.com

3. AquiPor Technologies, Inc.

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** AquiPor Permeable Concrete / AquiCrete
- **Product Description:** High-strength permeable concrete system utilizing a proprietary micro-pore metal-based binder to filter stormwater without reliance on traditional large-aggregate voids.
- **Contact Information:** Greg Johnson, CEO | greg@aquipor.com

4. Blue Planet Systems

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** Mineralized Synthetic Aggregate
- **Product Description:** Synthetic limestone aggregate produced by mineralizing captured CO₂ and industrial calcium waste.
- **Contact Information:** Kevin Davis | kevin.davis@blueplanetsystems.com

5. ByFusion Global Inc.

- **Self-Identified Organization Type:** Precast, Masonry & Modular Product Manufacturer
- **Product or Solution Name:** ByBlock®
- **Product Description:** Compression-molded building units manufactured from 100% recycled non-recyclable plastics.
- **Contact Information:** Brian Ellison, CCO | brian@byfusion.com

6. C-Crete Technologies

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** C-Crete Cement-Free Binder
- **Product Description:** Cement-free binder utilizing natural earth minerals and industrial byproducts to eliminate Portland cement.
- **Contact Information:** Rouzbeh Savary, President | rouzbeh@ccretetech.com

7. California Construction & Industrial Materials Association (CalCIMA)

- **Self-Identified Organization Type:** Trade Association
- **Product or Solution Name:** Industry Policy Guidance & Net-Zero Concrete Roadmap
- **Product Description:** Regional trade association providing policy, technical, and specification guidance for low-carbon concrete adoption.
- **Contact Information:** Charley Rea, VP Policy | crea@calcima.org

8. CalPortland Company

- **Self-Identified Organization Type:** Cement Manufacturer
- **Product or Solution Name:** ADVANCEMENT™ Blended Cements & Type IL
- **Product Description:** Blended hydraulic cements (Type IL and limestone-pozzolan blends) manufactured at local mills.
- **Contact Information:** Willy Regis, VP/GM SoCal | wregis@calportland.com

9. CarbiCrete

- **Self-Identified Organization Type:** Precast, Masonry & Modular Product Manufacturer
- **Product or Solution Name:** CarbiFlo Permeable Grid Pavers & CMUs
- **Product Description:** Cement-free precast products manufactured from steel slag and cured in gaseous CO₂.
- **Contact Information:** Yuri Mytko, CMO | yuri.mytko@carbicrete.com

10. Carbon Free Technologies ("CFT")

- **Self-Identified Organization Type:** Structural Engineering & Circularity Collaboration
- **Product or Solution Name:** e-Concrete™ & EcoTrain™
- **Product Description:** Processing system and data platform that converts C&D concrete waste into structural recycled aggregates.
- **Contact Information:** Jukka Makela, CEO | jukka@carbonfreetechnologies.com

11. Carbon Upcycling

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** CUT Clay & CUT Steel Slag
- **Product Description:** Carbonated and mechanochemically activated SCMs produced from local clays and industrial slag.
- **Contact Information:** Madison Savilow | madison.savilow@carbonupcycling.com

12. Chem Concrete USA

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** Chem Concrete Hybrid Admixture
- **Product Description:** Hybrid liquid admixture incorporating nano-silica to densify concrete matrices and reduce cement content.
- **Contact Information:** Jim Kaylor, Managing Director | jim@chemconcreteusa.com

13. Concrete Tech & Design

- **Self-Identified Organization Type:** Precast, Masonry & Modular Product Manufacturer
- **Product or Solution Name:** 3DCP Stabilized Adobe Clay
- **Product Description:** Natural earth and clay biomaterial formulation for 3D construction printing.
- **Contact Information:** Jane Olayiwola | Team@constructionjane.com

14. CRDC Materials

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** RESIN8
- **Product Description:** Synthetic fine aggregate manufactured from hard-to-recycle post-consumer plastics.
- **Contact Information:** Ross Gibby, COO | ross@crdc.global

15. Forma Systems Inc.

- **Self-Identified Organization Type:** Software & Structural Optimization Developer
- **Product or Solution Name:** Cimbra Platform
- **Product Description:** Algorithmic software platform that re-engineers precast concrete geometries to reduce total material volume.
- **Contact Information:** Kiley Feickert, CPO | kileyfeickert@forma-systems.com

16. Fortera

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** ReAct® Cement
- **Product Description:** Reactive calcium carbonate binder manufactured by capturing and mineralizing kiln flue-gas CO.
- **Contact Information:** Sherry Lee Chapman, VP Marketing | schapman@forterausa.com

17. GS2 Wall Systems

- **Self-Identified Organization Type:** Precast, Masonry & Modular Product Manufacturer
- **Product or Solution Name:** GS2 Modular Wall System
- **Product Description:** Dry-stack modular retaining wall units integrated with helical pile anchor foundations.
- **Contact Information:** Jon Daysh, General Manager | Jon@gs2ws.com

18. Heidelberg Materials Northwest Cement Company

- **Self-Identified Organization Type:** Cement Manufacturer
- **Product or Solution Name:** Type IL, Type IT, & evoBuild Cements
- **Product Description:** Blended hydraulic cements and carbon-capture attribute cements.
- **Contact Information:** Ignacio Cariaga | ignacio.cariaga@heidelbergmaterials.com

19. HempCement Inc.

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** HempCement Masonry & Hardscape
- **Product Description:** Non-Portland bio-composite building units composed of industrial hemp fiber and mineral binders.
- **Contact Information:** Serena Overhoff, CEO | serena@hempcement.co

20. LA28 Structural Concrete Reuse Collaboration / [RE]CAST

- **Self-Identified Organization Type:** Structural Engineering & Circularity Collaboration
- **Product or Solution Name:** [RE]CAST Structural Concrete Element Reuse System
- **Product Description:** Engineering methodology to salvage intact reinforced concrete components from demolished sites for direct structural reuse.
- **Contact Information:** Luke Lombardi | luke.lombardi@burohappold.com

21. National Ready Mixed Concrete Co.

- **Self-Identified Organization Type:** Ready-Mix Concrete Supplier
- **Product or Solution Name:** EcoMix® & LC3Crete
- **Product Description:** Custom low-carbon ready-mix formulations utilizing LC3 cements and high SCM replacement.
- **Contact Information:** James Little, Technical Sales | James.Little@natcem.com

22. Orcem America, LLC (Ecocem Materials)

- **Self-Identified Organization Type:** Cement Manufacturer
- **Product or Solution Name:** ACT Low-CO2 Cement Technology
- **Product Description:** Clinker-efficient binder technology combining micro-milled limestone, SCMs, and slag.
- **Contact Information:** Mike Donovan, Technical Director | mdonovan@ecocemglobal.com

23. PE-MAN

- **Self-Identified Organization Type:** Precast, Masonry & Modular Product Manufacturer
- **Product or Solution Name:** Fox Blocks Insulated Concrete Forms (ICF)
- **Product Description:** Interlocking expanded polystyrene formwork filled with concrete to provide integrated insulation and curing.
- **Contact Information:** Peter Scott, Founder & Principal | pks@pe-man.com

24. PHNX Materials

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** PHNX Beneficiated Class F Fly Ash
- **Product Description:** Beneficiated fly ash recovered from landfilled coal ash deposits to replace Portland cement.
- **Contact Information:** Krish Mehta, CEO | krishm@phnxmaterials.com

25. Prometheus Materials Inc.

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** ProZERO™ Microalgae Bio-Cement
- **Product Description:** Bio-cementitious binder utilizing biomineralized microalgae and natural pozzolans.
- **Contact Information:** Loren Burnett, CEO | loren@prometheusmaterials.com

26. Queens Carbon, Inc.

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** Q-SCM
- **Product Description:** Hydrothermally processed SCM manufactured from raw minerals at lower kiln temperatures.
- **Contact Information:** David Gersholowitz, Co-Founder | dave@queenscarbon.com

27. Solid Carbon Inc.

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** BioLOCK 2.0
- **Product Description:** Micronized biochar additive derived from waste biomass to sequester biogenic carbon in concrete.
- **Contact Information:** John Mead, CEO | john.mead@solid-carbon.com

28. Urban Mining Industries

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** Pozzotive® Ground-Glass Pozzolan
- **Product Description:** Post-consumer recycled glass pozzolan replacing up to 50% of Portland cement.
- **Contact Information:** Christopher Sidwa | csidwa@urbanminingind.com

29. W.R. MEADOWS

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** FINISH-ASSIST PRO™
- **Product Description:** Colloidal silica finishing aid applied during flatwork placement to improve surface workability on high-SCM mixes.
- **Contact Information:** Peter Weeks, Architectural Rep | pweeks@wrmeadows.com

30. ZeroTwelve Inc.

- **Self-Identified Organization Type:** Material & Solution Technology Provider
- **Product or Solution Name:** Z12™ Biochar SCM
- **Product Description:** Ultra-fine biochar-based SCM designed to sequester carbon in concrete matrices.
- **Contact Information:** Vital Aelion, CFO | vital.aelion@zerotwelve.com

Appendix B. RFI Questions

SECTION 1 — Respondent Information

Please provide your basic company and contact information below.

1 Company Name (Required)

2 Primary Contact Name (Required)

3 Title

4 Email Address (Required)

5 Phone Number

6 Company Headquarters Location

7 Type of Organization (Required)

a. Select one:

- ☐ Cement Manufacturer
- ☐ Contractor / Builder
- ☐ Equipment Provider
- ☐ Material Technology Provider
- ☐ Other
- ☐ Precast Manufacturer
- ☐ Ready-Mix Concrete Supplier

8 Years in Operation (Required)

a. Please enter the number of years your organization or business has been operating.

9 Manufacturing / Production Facilities Serving Southern California

10 Experience with Public Works Projects

11 Experience with Major or High-Visibility Projects (Required)

a. Please describe your experience working on major or high-visibility projects. Include details about your role, the project's impact, and any challenges you overcame.

SECTION 2 — Material / Product Overview

Please provide information on the product(s) you are submitting.

1 Product Name (Required)

2 Material Category

a. Select all that apply:

- ☐ Alternative / Bio-Based Material
- ☐ Cement / Binder System
- ☐ Cool Pavement
- ☐ Low-Carbon Concrete
- ☐ Modular System
- ☐ Other
- ☐ Permeable Pavement
- ☐ Precast System

3 Description of Product / System (Required)

4 Intended Applications

a. Select all that apply:

- ☐ Curbs / Gutters
- ☐ Other
- ☐ Planters
- ☐ Plazas / Public Realm
- ☐ Retaining Walls
- ☐ Sidewalks
- ☐ Streets / Pavements
- ☐ Transit Infrastructure

5 Key Material Components

6 Manufacturing / Production Facilities Serving Southern California

7 Experience with Public Works Projects

8 Experience with Major or High-Visibility Projects

SECTION 3 — Performance & Constructability

1 Compressive Strength Range (psi) (Required)

a. Please enter the compressive strength range in pounds per square inch (psi).

2 Flexural Strength (if applicable)

3 Strength Development Profile

a. Select all that apply:

- ☐ 28-day
 - ☐ 56-day
 - ☐ 90-day
 - ☐ Rapid-set
-

4 Durability Characteristics

5 Compliance with Standards

a. Select all that apply:

- ☐ ACI
 - ☐ ASTM
 - ☐ Caltrans
 - ☐ City of Los Angeles
 - ☐ Other
-

6 Installation Considerations

7 Compatibility with Conventional Practices (Required)

a. Select one:

- ☐ Fully compatible
 - ☐ Minor modifications required
 - ☐ Significant changes required
-

8 Testing / Inspection Differences

9 Permeability / Stormwater Benefits

10 Expected Service Life

SECTION 4 — Embodied Carbon & Environmental Data

1 % Reduction vs Baseline

2 Recycled Content (%)

3 Upload EPD(s)

a. Please upload PDF files only

4 Heat Island Mitigation (SRI/Reflectivity)

5 Global Warming Potential (GWP) (Required)

a. Include units: e.g., kg CO₂e per yd³

6 Do you have an Environmental Product Declaration (EPD)? (Required)

a. Select one:

☐ Facility-specific

☐ Industry-wide

☐ No

☐ Product-specific

7 Baseline Reference Used

8 SCM / Clinker Reduction Strategy

SECTION 5 — Manufacturing Capacity & Supply Chain

1 Supply Chain Risks / Constraints

2 Typical Lead Times

3 Production Facilities Serving SoCal

4 Annual Production Capacity

5 Raw Material Sources

6 Ability to Prioritize Public Projects

a. Select one:

☐ Depends

☐ No

☐ Yes

7 Ability to Scale (2026–2028)

SECTION 6 — Cost & Lifecycle

- 1 Lifecycle Cost Considerations
- 2 Installation Impacts
- 3 Cost Reduction Opportunities
- 4 Expected Cost Trends
- 5 Key Cost Drivers
- 6 Cost Relative to Conventional (Required)
 - a. Select one:
 - ☐ Cost parity
 - ☐ Lower cost
 - ☐ Moderate premium (10–25%)
 - ☐ Significant premium (>25%)
 - ☐ Slight premium (<10%)
- 7 Regional Economic Impact

SECTION 7 — Workforce & Local Impact

- 1 Use of Local Workforce
 - a. Select one:
 - ☐ No
 - ☐ Partially
 - ☐ Yes
- 2 Small / Diverse Business Partnerships
- 3 Workforce Development Programs

SECTION 8 — Innovation & Future Readiness**1** Interest in Pilot Projects

a. Select one:

☐ Maybe☐ No☐ Yes

2 Emerging Technologies (2026–2028)

3 Manufacturing Decarbonization Efforts

a. Select all that apply:

☐ Carbon Capture☐ Electrification☐ Other☐ Renewable Energy

4 Planned Facility Expansions

SECTION 9 — Clean Construction (Optional)

- 1 Barriers to Adoption
- 2 Do you support or deploy zero-emission equipment?
 - a. Select one:
 - ☐ No
 - ☐ Yes

- 1 Equipment Types
 - a. Select all that apply:
 - ☐ Charging infrastructure
 - ☐ Electric excavators
 - ☐ Electric loaders
 - ☐ Electric mixers
 - ☐ Other

SECTION 10 — Attachments

- 1 Upload Supporting Documents
 - a. EPDs, Technical sheets, Case studies, Certifications

SECTION 11 — Final Input

- 1 Key Barriers to Scaling Low-Carbon Concrete (Required)
- 2 Additional Comments

Carbon Forward Summit Recap

Appendix C. Towards the 2028 Olympic & Paralympic Games

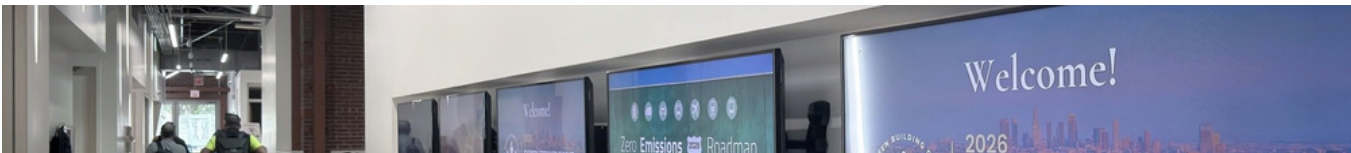
Carbon Forward is California's annual event for advancing lower-carbon materials and sustainable construction, convening architects, engineers, developers, manufacturers, policymakers, and building owners to move innovation into standard practice. With the 2028 Olympic & Paralympic Games approaching, the region has a rare chance to show how major investment in buildings and infrastructure can drive lasting change. The 2026 Summit drew 184 attendees across 14 sessions, an expo floor, and a back lot of lower-emission construction equipment.

AGENDA • SEPTEMBER 17, 2026

9:00 AM	Doors Open and Breakfast
10:00 AM	Welcome Aaron Gross, LADWP · Ignacio Valdivia, USGBC California · Julie Ciardullo, C40 · Ben Stapleton, USGBC California
10:15 AM	Panel Discussion I Concrete Action: Turning Market Innovation into Public Procurement
11:00 AM	Breakout Sessions I LEED v5 Carbon Reduction Strategies · Re-Use in Action · Embodied Carbon Leadership at a Crossroads · RFI Pitch Session I
12:00 PM	Break, Expo and Demos
1:00 PM	Panel Discussion II Sustainable Intelligence: Water, Carbon & Resilience in Data Center Development
2:00 PM	Breakout Sessions II How NZA Companies Are Scaling Low-Carbon Materials · Contractor's Commitment · Concrete Data Visualization · RFI Pitch Session II
3:00 PM	Breakout Sessions III CASE: California's Next Wave of Development · Advancing Low-Carbon Concrete · Breaking Paradigms · RFI Pitch Session III
4:00 PM	Closing & Happy Hour Hosted by the LA Women+ in Green Committee

In This Appendix

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Opening Remarks

Ben Stapleton, Chief Executive Officer, USGBC California

Just a few years ago, material reuse, environmental product declarations, and embodied carbon seemed like fringe topics. Very quickly, they have become core to the work we do, because we realized how much impact we can have when we bring intentionality to how we procure the goods we use and the buildings we build.

Part of the genesis of this event came in March, when we were talking with the City of Los Angeles about concrete procurement for sidewalks ahead of the Games. We knew lower-carbon options were out there, and the City had done a great pilot in some of its lots. But there wasn't a lot of transparency. People aren't always aware of the options, and even when they are specified, they may not be available when procurement comes.

In May, we issued a Request for Information to lower-carbon concrete suppliers across the region, with support from the County of Los Angeles, the City of Long Beach, and the City of Los Angeles. We may not be building a lot of new buildings for the Games, but we are going to be fixing a lot of streets and a lot of landscape, and a lot of concrete is going into that.

The reception has been phenomenal. Often, when you do something like this, industry pushes back on the new thing. I have been blown away by the support in the concrete world. What they are asking for is support from us on policy, on procurement, and on educating the industry so these materials get specified in plans and projects.

This isn't fringe anymore. It's not new. It could be the new standard for how we build going forward.

Remarks edited for length and clarity.

“We really need to create transparency and help folks realize this isn't something that's just fringe anymore.”

WHAT THE RFI REVEALED

A market that moves supply chains. Greater Los Angeles is one of the largest concrete markets in the country. When California shifts procurement, suppliers shift nationally.

Ready for today's jobsites. Most of the roughly 30 submitted solutions are compatible with current supply chains and construction practice.

Near cost parity now. Nearly 80% of solutions are available at or near cost parity, including 10 ready-mix plants and 8 CMU facilities.

Circularity already in place. Crushed demolition concrete already feeds regional aggregate supply, and lower-carbon specs will grow that demand.

WHAT COMES NEXT

Harmonize regional standards. USGBC California is working with the County and City of Los Angeles to align policy.

Joint pilots and a qualified products list. Move from one-off pilots to standard procurement.

A regional working group. USGBC California is ready to carry that flag forward.

Investment. Clear market signals unlock the capital to scale, and Greater LA can lead the country.



Ben Stapleton

Chief Executive Officer, USGBC California

Featured Panel • Opening Session

Concrete Action: Turning Market Innovation into Public Procurement

10:15–11:00 AM • LACI Amphitheater • Session Sponsor: Aquipor



MODERATOR



Ben Stapleton

Chief Executive Officer,
USGBC California



Steve Baule

Executive Officer, LA
Mayor's Office of Energy
and Sustainability



Chiu Tam

Senior Structural
Engineer, City of Los
Angeles Bureau of
Engineering



TJ Moon

Sustainability, Climate
Resiliency, and Equity
Officer, LA County Public
Works



Keith Hoey

City Engineer, City of
Long Beach

OVERVIEW

The Summit opened with the public agencies closest to the RFI. Building on its findings, the panel explored how performance-based standards, pilot projects, strategic partnerships, and coordinated procurement can strengthen supply chains, clear implementation barriers, and create lasting demand for lower-carbon concrete in scalable, replicable public infrastructure across Southern California.

Key Takeaways

What the region's public agencies said it will take

- 1 Public procurement sends the market signal.** The volume of material cities and regional agencies buy can reshape demand. When one agency adopts a standard, others follow, often through cooperative “piggyback” contracts. Progress feels slow, then moves fast.

STEVE BAULE
- 2 A repeatable path from pilot to specification.** The City of Los Angeles set a clear goal, opened dialogue with industry, benchmarked its completed projects, and piloted under real conditions. That data now backs a performance-based specification that drops unnecessary prescriptive limits.

CHIU TAM
- 3 The Greenbook is the regional lever.** Many Southern California agencies build their specifications on the Greenbook and Caltrans standards. Until those include lower-carbon provisions, local adoption stalls. A regional spec opens the door to wide adoption.

KEITH HOEY
- 4 Align the rules, not every mix.** Agencies need not share identical specs, but they should agree on how embodied carbon is measured, testing protocols, performance criteria, and procurement language. USGBC California can convene that alignment.

TJ MOON
- 5 Pilot the pathway, not just the product.** To avoid “pilot purgatory,” every pilot needs an exit strategy. It should prove performance, constructability, and repeatability, and answer who accepts the material and how it enters procurement.

TJ MOON
- 6 The cost premium was small.** The City's pilot at a Bureau of Street Services yard showed only a small material premium. Contractors reported placement and workability similar to conventional concrete, with no special equipment or added finishing time.

STEVE BAULE, CHIU TAM
- 7 Contractors are the compliance link.** Contractors submit mix designs and batch tickets that owners verify and test. Their field experience makes them essential partners as specifications change.

KEITH HOEY

“Don't just pilot a technology; pilot the pathway.”



TJ MOON, LA COUNTY PUBLIC WORKS

“The purpose of doing the pilot is not to have a successful project. We want to make sure it can become the future standard.”



CHIU TAM, CITY OF LOS ANGELES

RELATED IN THIS REPORT Section 5 · Market, Technical, and Financial Barriers to Scale | Section 6 · Recommendations and Regional Roadmap

Session Recap

California's Embodied Carbon Leadership at a Crossroads

11:00 AM–12:00 PM · Breakout Session I

MODERATOR

**Michael Rochmes**Policy & Advocacy
Manager, USGBC
California**Holmes Bassette**Air Pollution Specialist,
California Air Resources
Board**Casey Castor**

Principal, Practice Labs

**Peter Roquemore**Sustainability Analyst,
City of Santa Monica**Dharma Santos-Santiago**State Industrial
Advocate, NRDC

OVERVIEW

State and local policymakers and advocates on the front lines of embodied carbon policy examined the current policy landscape, from Buy Clean California and CARB's embodied carbon work to local ordinances, and discussed what leadership looks like as California prepares for new state leadership.

RELATED IN THIS REPORT Section 2 · Regional Opportunity & Policy Drivers | Section 6 · Recommendations

Session Recap

Concrete Data Visualization & Derisking Low Carbon Concrete

2:00–3:00 PM · Breakout Session II · Session Sponsor: Chem Concrete USA · Moderator: [to confirm]

**Don Davies**Co-Founder / Principal,
Davies-Crooks Associates**Miles Haladay**COO, Concrete Transition
Capital**Bryce Tanner**

Associate Principal, Arup

**Frances Yang**Associate Director, Carbon
Leadership Forum

OVERVIEW

Engineers, researchers, and investors explored how better data on lower-carbon concrete performance, supply, and demand can reduce perceived risk for specifiers, owners, and lenders. The conversation built on a gap USGBC California first identified at a regional convening: too little transparency on what the market can deliver and how products perform.

RELATED IN THIS REPORT Section 4 · Deployment Readiness and Regional Capacity | Section 5 · Barriers to Scale

Session Recap

Advancing Low-Carbon Concrete in California

3:00–4:00 PM · Breakout Session III · Presentations + Q&A



James Little

Director of Technical Sales,
National Ready Mixed
Concrete Company



Deepak Maskey

Senior Transportation
Engineer, California
Department of
Transportation



Somayeh Nassiri

Director and Professor,
University of California,
Davis

OVERVIEW

Perspectives from a transportation agency, academia, and industry on reducing the environmental impacts of concrete in California. Caltrans discussed how life-cycle cost analysis and environmental-impact considerations can guide material selection. UC Davis reviewed the evaluation of alternative supplementary cementitious materials (SCMs), and National Ready Mixed Concrete offered an industry view on alternative cements and broader adoption.

RELATED IN THIS REPORT Section 2 · Primary Cement Decarbonization Methods | Section 4 · Deployment Readiness

Session Recap

Breaking Paradigms: Carbon Sequestration, a New Approach to Concrete Masonry and Concrete

3:00–4:00 PM · Breakout Session III · Presentation



Luis Baquerizo

Director of the Central
Research Laboratory,
CalPortland



Heidi Jandris

Sustainability Consultant &
Owner, KORE LLC

OVERVIEW

Concrete absorbs CO₂ over its lifetime through carbonation, and recent research shows concrete masonry sequesters carbon at accelerated rates due to how it is manufactured. The session showed how design choices affect the carbon intensity of concrete assemblies, reviewed sequestration reported in the 2025 concrete masonry industry-average EPD (A1–A3 and B1), and introduced the Concrete Masonry and Hardscapes Association's new carbon calculator.

RELATED IN THIS REPORT Section 2 · Concrete Circularity & Aggregate Strategies | Section 4 · EPD Availability

RFI Pitch Sessions

Across three pitch sessions, 22 manufacturers and technology providers presented lower-carbon concrete solutions directly to the agencies, specifiers, and project teams who buy and build with concrete. The sessions put the market this report describes in front of the people ready to use it.

SESSION I	SESSION II	SESSION III
● AquiPor	● Aggreplex	● Blue Planet Systems
● ByFusion	● CRDC Materials	● CalCIMA
● C-Crete	● Fortera	● CalPortland
● Chem Concrete USA	● GS2 Wall Systems	● Carbon Free Technologies
● Ecocem	● Heidelberg Materials	● CJ Consulting LLC
● Forma Systems	● National Ready Mixed Concrete Company	● National Ready Mixed Concrete Company
● PHNX Materials	● PE-MAN Project Engineering & Management	● ZeroTwelve
	● Prometheus Materials	



RELATED IN THIS REPORT Section 3 · About the RFI and Responses | Section 4 · Deployment Readiness, EPDs, and Regional Capacity

Also at the Summit

Beyond concrete, the Summit program covered rating systems, circular materials, and the fast-growing data center sector.

LEED v5 Carbon Reduction Strategies: Major Venues, Materials & Measurable Impact

11:00 AM · Breakout Session I

How LEED v5 is creating new opportunities to cut embodied carbon through smarter material choices and project delivery, with applications across airports, stadiums, and large multi-use venues.



Wes Sullens

Senior Director, USGBC



Steph Hallinan

Associate Director, USGBC



Victoria Watson

Principal, High Performance Buildings, AECOM



Mersy Maradiaga

Sustainability Engineer, Turner Construction

Re-Use in Action: Planning, Designing, and Executing for a Circular Economy

11:00 AM · Breakout Session I

Why material stewardship matters for carbon, what to know about specifying salvaged building materials, and how reuse fits into community narratives on Southern California projects.



Kathleen Hetrick

Associate Principal, Buro Happold



Gillian Lauter

Sustainability Consultant, BranchPattern



Soham Patel

Sustainability Analyst, Practice Labs



Sophie Pennetier

Founder & CEO, Digne

Sustainable Intelligence: Rethinking Water, Carbon & Resilience in Data Center Development

1:00 PM · Panel Discussion II

The interconnected demands of water, energy, and carbon in one of the fastest-growing building sectors, plus a preview of an upcoming architectural design competition on data center sustainability.

MODERATOR



Ben Stapleton

CEO, USGBC California



Patrick Coughlin

Concrete Executive, Turner Construction



Sara Neff

Partner/GM, Microsoft



Olivier Sommerhalder

Principal, Gensler



Seth Strongin

Building Decarbonization Planning Director, HDR

Session Recap

Contractor's Commitment Materials Update

2:00–3:00 PM · Breakout Session II · LADWP 201



Kyle Pickett

Senior Project Manager, Community Initiatives, USGBC California



John Ambert

Senior Advisor, Clean Construction, USGBC California

Contractors are uniquely positioned to turn sustainability goals into measurable action. This session explored how the evolving Contractor's Commitment Carbon and Materials pillars help construction teams track emissions, improve material transparency, and drive lower-impact decisions across their portfolios.

KEY TAKEAWAYS

- 1 Close the construction gap.** Climate goals are set in design and procurement, but outcomes are decided in execution, where contractors have control.
- 2 Built by contractors, for contractors.** Five pillars (carbon, materials, water, wellness, waste) shaped by firms including DPR, Mortenson, Swinerton, and Turner.
- 3 Version 3.0 raises the floor.** A new "Reported" on-ramp beneath the Good, Better, Best staircase lets more teams start.
- 4 From transparency to performance.** Use EPDs to quantify embodied carbon, then write carbon into specs, submittals, buyout, and supplier conversations.
- 5 Measure, benchmark, reduce, electrify.** Cut jobsite fuel demand before changing the fuel, then shift equipment and temporary power to cleaner energy.
- 6 The ask of owners.** Give contractors clear requirements early, define what gets measured, and put carbon into procurement.

Takeaways drawn from the session presentation.

Session Recap

California Alliance of Sustainability Executives: California's Next Wave of Development

3:00–4:00 PM · Breakout Session III · LACI Amphitheater · Session Sponsor: Introba

The next generation of development is already taking shape. As embodied carbon moves from aspiration to expectation, developers and project teams must rethink how projects are planned, procured, and delivered. Drawing on Carbon Forward case studies and real-world lessons, panelists shared deployable strategies that reduce embodied carbon while creating business value.



Kyle Pickett
Moderator, USGBC California



Claudia Tarpin
Director, Development, Prologis



Kristian Weeks
Senior Director, Tishman Speyer



Lindsey Pierson
Sustainability Strategist, Lincoln Property Company

KEY TAKEAWAYS *From the session moderator.*

- 1 Move carbon decisions upstream.** The choices that matter most happen in planning, design, specification, and procurement, while cost, materials, and performance are all still in play.
- 2 Build for repeatability, not one-offs.** A large portfolio can turn one success into a standard, but only if the strategy survives real schedules, real budgets, and the next project team.
- 3 The next wave is about value, not compliance.** Regulation, material innovation, and investor and tenant expectations converge on one question: will this asset still be worth something in thirty years?

Up and Comers · Net Zero Accelerator Showcase

How NZA Companies Are Scaling Low-Carbon Materials

2:00–3:00 PM · Breakout Session II · LADWP Sustainable Living Lab



MODERATOR

Colin Mangham

Chief Experience Officer, USGBC California



CO-HOST

Sebastian Muñoz

Senior Advisor, USGBC California



Founded in 2019 to close the gap between policy and innovation, USGBC California's Net Zero Accelerator connects climate technology companies with pilot opportunities, advisors, and the community connections they need to scale. More than 130 companies across seven cohorts, with Cohort 8 underway.

NetZeroAccelerator.org

The moderators kept this one analog: seven current and alumni companies passed around real products you can touch, rap your knuckles on, and pour water through, and shared what it takes to move them from first pilot to standard spec.

ON THE PANEL



Greg Johnson
NZA '22



Sophie Pennetier
NZA '25



Serena Overholt & Scott Holmes
NZA '25



Candice Delamarre
NZA '23



George Schmidbauer
NZA '25



Eric Jensen & Joe Dashow
NZA '26



Anthony Dente
NZA '25

ALSO IN ATTENDANCE



RELATED IN THIS REPORT Section 5 · Market, Technical, and Financial Barriers to Scale | Section 6 · Recommendations and Regional Roadmap

Up and Comers · Key Takeaways

What it takes to go from first pilot to standard spec

- 1 A pilot is a bite-sized taste.** NZA pilots start after proof of concept: if it works in building one, can it go to buildings two through ten? Hosts willing to offer space, even 400 square feet, are how young companies earn validation.

COLIN MANGHAM, USGBC CALIFORNIA
- 2 Pivot to where the market already works.** Facing costly ASTM hurdles for a standalone product, Aquipor reformulated as an additive for standard concrete mixes. Same manufacturing and installation, now pervious and filtering, and able to replace a portion of Portland cement.

GREG JOHNSON, AQUIPOR
- 3 The sales cycle is the hardest part.** Mad River has solved production of dowel-laminated timber, but two-to-five-year sales cycles and slipping schedules led it to pause scale-up and focus on market development and policy. Demand has to show up before capex.

GEORGE SCHMIDBAUER, MAD RIVER MASS TIMBER
- 4 Certification needs public backing.** Hemp Cement's structural block has five years of university testing and is headed for fire testing. Support from cities or investors to finish certification, plus a block manufacturing partner, is the unlock.

SERENA OVERHOLT, HEMP CEMENT COMPANY
- 5 Do more good, not just less bad.** Bio-based straw panels store carbon captured through photosynthesis. Recovered building glass carries about one-third the footprint of virgin glass, and Digne reported recovering roughly 300 tons this year through a first-of-its-kind city program.

ANTHONY DENTE, VERDANT · SOPHIE PENNETIER, DIGNE
- 6 Partners compound.** Kit Switch's prefabricated kitchens can showcase other innovative materials, and Orion's retrofit filter, with about 10% electricity savings, pairs with LED and other upgrades. Raise growth capital after organic traction, with a brand built for ten years out.

CANDICE DELAMARRE, KIT SWITCH · ORION · SEBASTIAN MUÑOZ

"If it works in building one, can you then take it to buildings two through ten?"



COLIN MANGHAM, USGBC CALIFORNIA

"Stay in the fight. Don't run out of money if you can help it. Give yourself a chance."

GREG JOHNSON, AQUIPOR

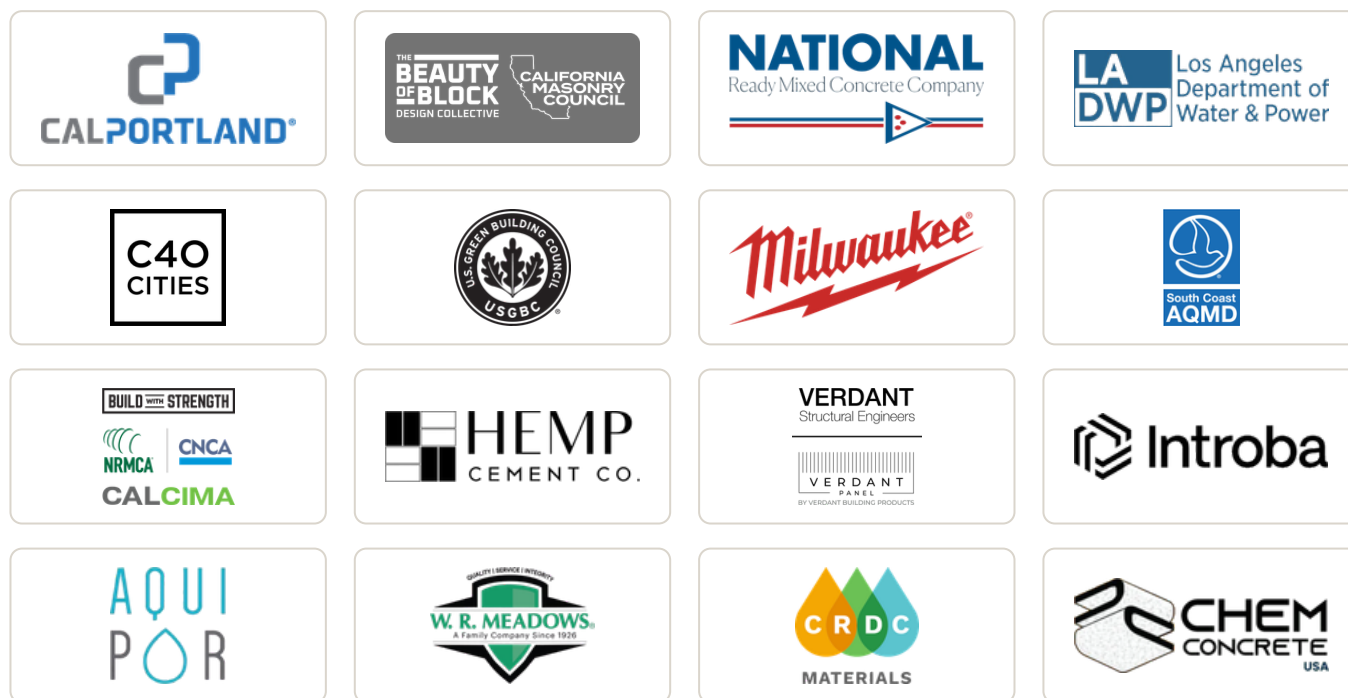
HOW YOU CAN HELP

- **Host a pilot.** Offer a first building, even 400 square feet, so a proven product can move to buildings two through ten.
- **Partner on manufacturing.** Hemp Cement is looking for a block manufacturer to scale production.
- **Specify recovered and bio-based materials.** Digne's recovered glass and Verdant's straw panels need projects that call for them.
- **Back certification.** Hemp Cement needs city or investor support to finish fire testing on its structural block.
- **Send demand signals early.** Mad River has paused scale-up until a steady project pipeline justifies the capital investment.
- **Connect with the cohort.** Share space, expertise, or introductions at netzeroaccelerator.org.

Thank You

The Carbon Forward Summit would not happen without the partners, sponsors, and exhibitors who invest in this work and show up to share it.

EVENT PARTNERS & SPONSORS



EXHIBITORS



Venue provided by the Los Angeles Department of Water and Power. Co-hosted with C40 Cities.

The Summit in Photos

A select few photos of dozens taken and available. Let us know if you would like access to the media library.



Appendix D. Glossary of Terms

A

- **Alkali-Silica Reactivity (ASR):** A slow chemical reaction that occurs inside hardened concrete over time when moisture, alkalis from cement, and reactive silica from certain aggregates combine. The reaction forms an internal gel that swells as it absorbs water, causing internal expansion and severe cracking (often referred to colloquially as "concrete cancer").
- **Alternative Binder:** A hydraulic cementitious material or mineral binder formulated without conventional Portland cement clinker. Alternative binders frequently utilize non-carbonate rocks (such as basalt, granite, or zeolites) or chemical activation to achieve structural strength while significantly reducing calcination emissions.

B

- **Batch Plant:** An industrial facility where raw concrete ingredients—water, sand, crushed stone, cementitious binders, and chemical admixtures—are measured (batched) and mixed together before being loaded into transit trucks or precast molds for delivery.
- **Blended Cement:** A hydraulic cement produced by intergrinding or blending Portland cement clinker with one or more supplementary cementitious materials (such as limestone, slag, calcined clay, or fly ash). See [ASTM C595](#).
- **Buy Clean California Act (BCCA):** California legislation (AB 262, enacted in 2017) mandating state agencies to establish maximum allowable Global Warming Potential (GWP) limits for specific structural materials used in state-funded infrastructure projects, requiring facility-specific EPDs for compliance.

C

- **Calcined Clay:** Clay (primarily kaolinite) that has been thermally activated at moderate temperatures (700–800°C) to form a highly reactive pozzolan. When blended with ground limestone and cement clinker, it forms Limestone Calcined Clay Cement (LC³).
- **Calcination:** A high-temperature thermal process in cement manufacturing where limestone (CaCO₃) is heated to roughly 900°C inside a kiln, breaking it down into lime (CaO) and releasing carbon dioxide gas (CO₂) directly into the atmosphere. Calcination accounts for approximately 60% of traditional cement production emissions.
- **California Environmental Quality Act (CEQA):** A California state law requiring state and local public agencies to identify, evaluate, and disclose the environmental impacts of proposed development projects—including new industrial processing facilities—and to adopt feasible measures to mitigate those impacts.
- **Carbonation:** Concrete carbonation is a chemical process where carbon dioxide (CO₂) from the air penetrates concrete and reacts with hydration products to form calcium carbonate (CaCO₃), slightly increasing surface hardness and compressive strength.
- **Carbon Capture, Utilization, and Storage (CCUS):** A suite of technologies designed to capture carbon dioxide emissions directly from industrial flue gases (such as cement kilns) and either permanently store them in underground geological formations or utilize them in manufacturing processes (such as concrete mineralization).
- **Carbon Mineralization:** A chemical reaction where gaseous carbon dioxide (CO₂) reacts with calcium sources to form solid, stable calcium carbonate (CaCO₃). In lower-carbon building materials, technology providers utilize this reaction to permanently bind CO₂ from the manufacturing process into the finished product where it cannot be re-released.
- **Clinker:** The dark gray, nodular material produced during the intense heating of limestone and clay inside a cement kiln. Interground with small amounts of gypsum, clinker forms traditional Portland cement; it represents the primary source of embodied carbon in concrete.
- **Compressive Strength:** The maximum compressive stress or load a hardened concrete sample can bear before failing, measured in pounds per square inch (psi) or megapascals (MPa). Standard structural strength is traditionally measured at 28 days of curing.
- **Concrete Masonry Unit (CMU):** A standard rectangular block composed of concrete, widely used in building construction, retaining walls, and perimeter barriers. Commonly referred to as Masonry Block.

E

- **Embodied Carbon:** The greenhouse gas (GHG) emissions generated across a building material's full lifecycle—including raw material extraction, processing, transportation, assembly, maintenance, and end-of-life demolition. While total embodied carbon spans cradle-to-grave impacts, product-level Environmental Product Declarations (EPDs) typically evaluate "cradle-to-gate" emissions (raw extraction to the point it leaves the manufacturing plant gate), which represent the critical upfront portion of a material's carbon footprint.
- **Environmental Product Declaration (EPD):** An independently audited, third-party verified document that communicates the lifecycle environmental impact of a product. Functioning as an "environmental nutrition label," an EPD reports standardized metrics, including Global Warming Potential (GWP).

F

- **Fly Ash:** A fine, glass-like powder captured from the flue gases of coal-fired power plants. Long utilized as a high-performance pozzolan to replace Portland cement, local availability has declined rapidly across the Western U.S. due to coal plant retirements.

G

- **Global Warming Potential (GWP):** A standardized metric expressing the relative impact of greenhouse gas emissions generated over a material's lifecycle, expressed in kilograms of carbon dioxide equivalent (kgCO₂e). For concrete, GWP is typically reported per cubic yard or cubic meter.
- **Greenbook:** Officially titled the Standard Specifications for Public Works Construction, a widely adopted public works specification manual used across Southern California cities and counties to govern public infrastructure projects.
- **Ground Granulated Blast Furnace Slag (Slag):** A glass-like, non-metallic byproduct formed when molten iron is smelted from iron ore in a blast oxygen furnace. When rapidly quenched with water, dried, and ground into a fine powder, ground slag acts as a highly reactive supplementary cementitious material (SCM) that can replace 30% to 70% of Portland cement in concrete mixes, significantly improving durability and chemical resistance in marine and wastewater environments. Other forms of slag, such as "Electric Arc Furnace Slag (EAFS)," have not been considered within this report. While experimentation is underway to make EAFS more reactive as an SCM within concrete, its use is limited today.

H

- **Hydration:** The chemical reaction that takes place when cement or pozzolans are mixed with water, forming crystalline compounds that bind sand and gravel together into hardened concrete.

L

- **Limestone Calcined Clay Cement (LC³):** A branded lower-carbon blended cement technology that replaces up to 50% of traditional Portland cement clinker with a combination of calcined clay and raw limestone. In North American building specifications and codes, LC3-based formulations are standardized under ASTM C595 as blended hydraulic cements.
- **Life Cycle Assessment (LCA):** A systematic, data-driven method for evaluating the environmental inputs, outputs, and potential impacts of a product or material across all or part of its lifespan.

P

- **Performance-Based Specification:** A procurement standard that sets required physical, structural, and environmental criteria (such as minimum strength, maximum permeability, and maximum GWP limits) while granting suppliers flexibility to determine the exact mix proportions and materials used.
- **Portland Cement (OPC):** Conventional hydraulic cement produced by pulverizing Portland cement clinker, conforming to ASTM C150 standards
- **Portland-Limestone Cement (Type II, also called PLC):** A blended hydraulic cement conforming to ASTM C595, produced by replacing up to 15% of high-carbon clinker with finely ground raw limestone. It acts as a replacement for standard Type II/V cement while reducing carbon intensity by approximately 10%.
- **Portland-Pozzolan Cement (Type IP):** A blended hydraulic cement conforming to ASTM C595, produced by replacing up to 15% of cement clinker with finely ground raw limestone and up to 40% with pozzolan (fly ash or natural pozzolan, for example.) It acts as a replacement for standard Type II/V cement while reducing carbon intensity by 20–50%.
- **Pozzolan:** A siliceous or siliceous-and-aluminous material (such as fly ash, slag, calcined clay, or volcanic ash) that possesses little cementitious value on its own, but reacts chemically with calcium hydroxide in the presence of water to form cementitious compounds.
- **Prescriptive Specification:** A traditional procurement rule that mandates fixed mix ingredients—such as specifying a rigid minimum weight of Portland cement per cubic yard—regardless of whether a supplier could meet performance requirements using less cement.

Q

- **Qualified Products List (QPL):** A centralized, pre-approved registry maintained by public agencies listing materials, mix designs, and products that have cleared technical reviews and field validations, allowing them to be specified directly without repeating jobsite testing.

R

- **Recycled Concrete Aggregate (RCA):** Aggregate produced by crushing, screening, and processing concrete demolished from old pavement or structures, used to replace virgin quarried gravel and sand in new road base, backfill, or flatwork concrete.

S

- **South Coast Air Quality Management District (SCAQMD):** The regional air pollution control agency responsible for regulating stationary industrial emission sources—including cement kilns, aggregate yards, and processing plants—across Los Angeles, Orange, and portions of San Bernardino and Riverside counties.
- **Supplementary Cementitious Material (SCM):** Industrial byproducts or natural pozzolans (such as slag, fly ash, or calcined clay) used to partially replace high-carbon Portland cement in concrete mixes.

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- **Type III EPD:** A comprehensive, third-party verified Environmental Product Declaration developed in accordance with ISO 14025 standards, providing quantified environmental data based on an audited Life Cycle Assessment.