

# MASS TIMBER COMPETITION: BUILDING TO NET-ZERO CARBON

Request for Proposals and  
Entry Requirements



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## Competition Dates

Submission Entry Period Begins .....	Tuesday, February 15, 2022
<a href="#"><u>Competition Q&amp;A Webinar</u></a> .....	Friday, March 11, 2022
Submission Entry Period Ends .....	Wednesday, March 30, 2022 at 11:59pm ET
Judging Concludes .....	Thursday, June 2, 2022
Recipients Notified .....	Friday, June 17, 2022
Public Announcement .....	June 2022 at AIA Conference on Architecture

## Competition Objectives

This competition is being held to showcase mass timber’s application, practicality, commercial viability, and role as a natural climate solution that reduces the built environment’s carbon footprint. It is intended to help expand the use of mass timber building solutions and support increased employment in advanced wood products design, engineering, construction, supply chain, and manufacturing sectors.

Funding for the competition is provided by the Softwood Lumber Board (SLB) and USDA Forest Service (USDA FS) to support:

- Costs associated with the use of mass timber or mass timber hybrid building systems and construction.
- Efforts to overcome barriers to the use of a new building material and system, most notably the costs of analyzing design and engineering alternatives and verifying that these solutions comply with applicable code(s).

Lessons learned from the competition will be shared with the broader design and construction community to help support future projects, including cost analyses, life cycle assessments (LCAs), and other research results. By making these findings public, the organizers are also seeking to further prove the business case for mass timber in project types where the use of wood is less common, including institutional, industrial or warehouse/distribution centers, educational, and healthcare environments.

## Award Amount

The competition will award \$2,000,000 in total funds across multiple project teams. Individual awards are anticipated to be up to \$500,000 each.

## Submission Eligibility

To be eligible to enter, the applicant must be one of the following:

- A for-profit building sector organization registered in the U.S. (e.g., architect, engineer, developer, building owner, general contractor).
- A not-for-profit organization incorporated as a not-for-profit corporation or society formed in the U.S. (e.g., college, university, association).
- A U.S. local government entity (e.g., city, county, state).
- A Native American Tribal government entity or organization.

An eligible project must be located within the United States and be one of the following types: commercial, institutional, industrial, educational, mixed-use, or multifamily housing developments. Single-family homes are *not* eligible.

An eligible project must include one of the following mass timber systems: cross-laminated timber (CLT) of either solid-sawn and structural composite lumber, nail-laminated timber (NLT), glued-laminated timber (glulam), dowel-laminated timber (DLT), and other mass timber products approved by the competition organizers upon request. Mixed material (hybrid) solutions that have predominately mass timber components along with other structural materials are also eligible.

## Eligible Expenses

Awarded funds must be used towards costs incurred after competition funds have been granted and only for the following eligible expenses:

### *Schematic Design, Design Development, and Construction Drawings*

- Architecture.
- Concept and design development.
- Engineering.
- Incremental preliminary evaluation of possible structural solutions and building serviceability-related issues.
- Incremental design expenses related to the design of the wood structure.
- Integration of novel solutions when detailing structural documents for tendering and construction.
- Fire safety and protection.
- Fire and building safety strategies, related issues, and possible solutions.
- Building enclosure design.
- Examination of issues and detailing solutions related to the building's exterior façade.
- Mechanical and electrical interfaces.
- Strategies and issue resolutions related to system integration.
- Secondary impact and preliminary cost analysis related to use of wood products, components and systems, and related construction methodologies.

### ***Research, Testing, and Other Required Support by Third Parties***

- Research and testing related to acoustic, fire, seismic, vibration, connections, building envelope assembly materials, and construction techniques.
- Whole building life cycle assessment (WBLCA) or structural LCA.
- Costs associated with product, component, and/or system modeling and testing.

### ***Building System Code Acceptance, Final Cost Analysis, and Approvals***

- Architecture and engineering.
- Comprehensive resolution of design issues.
- Final code review, final cost analysis, and preparation of documents and peer review process costs.
- Additional design modeling or testing requirements.
- Final documents and presentations to the local authority for building permit approvals.
- Other project approval costs.

### ***Construction***

- Quality control, site inspection, and site safety costs.
- Risk management related costs.

### ***Related Activities and Other Costs Not Noted but Directly Attributable to the Development and Construction of a Wood Solution***

- Incremental supervision and trade training associated with the proposed wood solution(s).
- Instrumentation during construction and ongoing monitoring costs associated with building performance of critical wood components or assemblies.
- Extraordinary course of construction insurance premiums and other extraordinary insurance that is clearly defined.
- Construction site access requested by the competition partners that may cause the proponent to incur additional costs (e.g., construction disruption and additional site safety requirements that may result from visitor tours or promotional events).

## Submission Evaluation Preferences

Evaluation preference will be given to building typologies where mass timber is currently underutilized but has great opportunity, such as buildings in the six- to 18-story range, warehouse distribution facilities, big-box retailers, and healthcare. Preference will also be given to projects that are scalable and repeatable in many markets within the U.S.

Timber sourced for the project should demonstrate sustainable forest management that contributes to forest and watershed health. Several approaches are used to ensure sustainable supply of wood products, including federal, state, and local regulations, third-party certifications, best management practices, and an emerging ASTM standard.

Preference will also be provided for projects that commit to using domestically harvested and manufactured mass timber.

## Evaluation Methodology and Scoring Rubric

### *Methodology*

Each project submission will be evaluated by an independent panel of industry professionals representing architecture, engineering, construction, development, forestry, and sustainability. The panel will consider the aspects of the project using the weighted scoring rubric outlined below. Panel members will meet as a group to discuss and evaluate projects, and to choose the recipients.

The panel will reward submissions that have the following attributes:

- The submitted project has the potential to catalyze broader adoption of mass timber for new and innovative applications and systems. The project team has identified and resolved market barriers (e.g., research, testing, building code adoption) that can expedite other future projects.
- The project team has developed and documented a new solution in the design, engineering, and construction of a mass timber system within existing codes and regulations.
  - Or the project team has validated a creative application of mass timber outside the current regulations.
  - Or the project has demonstrated an innovate way to reduce embodied carbon in buildings that can be repeated at scale by developers and city planners.

### *Scoring Rubric*

Points will be awarded based on the range provided for each section, and each section is allotted points based on its importance to the project scope. The total points achievable for each project is 1,000.

### *Proposal Document Structure*

**Project teams should organize their proposal in a manner that aligns with the four-part scoring structure described below.** Failure to do so may result in missed points and a lower overall score.

## Section 1: Project Description – 250 points

1.1	0 – 25 points	<p><b>Project Overview</b></p> <ul style="list-style-type: none"> <li>• Describe the location, site plan, and intended use of the project.</li> <li>• Explain how this project fits into the community.</li> <li>• Show a benefit to underserved/historically marginalized people, their communities, and/or the forest areas they value. If applicable, explain how this project supports <a href="#">Executive Order 13985</a>: “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government.”</li> </ul> <p><i>Eligible projects in the U.S. and territories include:</i></p> <ul style="list-style-type: none"> <li>• For-profit building sector organizations registered in the U.S. (e.g., architect, engineer, developer, building owner, general contractor).</li> <li>• Not-for-profit organizations incorporated as a not-for-profit corporation or society formed in the U.S. (e.g., colleges, universities, associations).</li> <li>• U.S. local governments (e.g., city, county, state).</li> <li>• Native American tribal government entities or organizations.</li> </ul>
1.2	0 – 75 points	<p><b>Building(s) Plan</b></p> <ul style="list-style-type: none"> <li>• Include the schematic program: project size, floor area, and number of stories.</li> <li>• Explain the planning, entitlements, and permitting status – land and building.</li> <li>• Identify the proposed IBC Construction Type(s) and Building Occupancies.</li> </ul> <p><i>Eligible projects are commercial, institutional, industrial, educational, mixed-use, offices, and multifamily housing developments. Single-family homes are not eligible. All construction types are eligible, including the new tall-wood construction types in the 2021 IBC (IV-A, IV-B, and IV-C). Projects that are repeatable or offer large-scale market opportunities that are outside of traditional multifamily, office, or mixed-use categories will receive more points.</i></p>
1.3	0 – 75 points	<p><b>Project Schedule and Funding</b></p> <ul style="list-style-type: none"> <li>• Provide project schedule and status.</li> <li>• Provide project cost estimates and a schedule of expenses.</li> <li>• Describe the funding required for completion of the project specifying funds already in place and outstanding needs.</li> <li>• Estimate how much of the total project cost for your organization would be offset by the requested award amount.</li> </ul>

1.4	0 – 50 points	<p><b>Use of Competition Award Funding</b></p> <ul style="list-style-type: none"> <li>• Explain how the funds will be used.</li> <li>• Provide a list of tasks, with an approximate schedule and budget for each, which are requested to be financially supported by the award.</li> </ul>
1.5	0 – 25 points	<p><b>Team Profiles</b></p> <ul style="list-style-type: none"> <li>• List the team members, including key individuals, committed to the project. This may include the developer, architect, structural engineer, construction manager, mass timber supplier, and/or general contractor. Include any important specialty consultants particularly relevant to the success of the project (e.g., fire, acoustics, LCA, Building Information Modeling (BIM)).</li> <li>• Include bios of team members that describe their experience with previous mass timber projects.</li> <li>• Describe the diversity and equity reflected within the makeup of the project team.</li> </ul> <p><i>Letters of support or commitment from key stakeholders, team members' mass timber resumes, and supporting information may also be provided.</i></p>

**Section 2: Business Case for Mass Timber – 400 points**

2.1	0 – 100 points	<p><b>Mass Timber Solution</b></p> <ul style="list-style-type: none"> <li>• Describe the mass timber solution(s) to be used in the project. Include detailed information on where in the building mass timber will be used and estimate the component sizes, total volume, and percentage of mass timber structural components in the overall project.</li> <li>• Provide conceptual construction plans and drawings, if available, as attachments.</li> </ul> <p><i>For this competition, mass timber includes cross-laminated timber (CLT), nail-laminated timber (NLT), glued-laminated timber (glulam), dowel-laminated timber (DLT), products that meet PRG 320-19, and other mass timber products approved by the competition organizers upon request. Mixed material (hybrid) solutions that have predominately mass timber components along with other structural materials are also eligible.</i></p>
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2.2	0 – 150 points	<p><b>Mass Timber Performance and Justification</b></p> <ul style="list-style-type: none"> <li>• Explain how the mass timber system will meet project objectives and key code requirements—e.g., structural, fire, life safety, acoustics, vibration, durability, and sustainability.</li> <li>• Explain existing research, testing, or proven technical solutions being used (or that will be used) to safely design, permit, and construct the project.</li> <li>• Explain new research, testing, or technology development needed to safely design, permit, and construct the project.</li> <li>• Indicate if approval of an alternate means and methods request (AMMR) is needed for the proposed project. If so, demonstrate the track record for acceptance of similar projects with the Authority Having Jurisdiction (AHJ). Provide supporting information on the AHJ’s likely position(s) and a letter from the AHJ regarding the proposed project. Describe contingency plans if the AMMR is not approved.</li> <li>• Describe the solutions developed for this project that will be documented and shared with the design and construction community.</li> <li>• Describe any known implications of using mass timber on project funding, insurance, or related topics and how they will be addressed.</li> </ul> <p><i>Ideal candidates are high-profile, repeatable, economically viable U.S. projects that utilize existing research and/or proven alternative technical solutions and available technical expertise for their successful execution.</i></p>
2.3	0 – 75 points	<p><b>Mass Timber Sourcing</b></p> <ul style="list-style-type: none"> <li>• Identify selected manufacturers of mass timber products or manufacturers being considered to supply products.</li> <li>• If appropriate, provide a letter of commitment to use lumber sourced and mass timber produced from the U.S. or North America.</li> <li>• Provide a statement of sustainability from the manufacturer for specified mass timber products.</li> </ul> <p><i>Preference will be given to projects that commit to using U.S. harvested and manufactured mass timber. An objective of the competition is to grow the U.S. mass timber and solid-sawn lumber markets and strengthen the domestic mass timber supply chain.</i></p> <p><i>Wood products sourced for the project should demonstrate sustainable forest management that contributes to forest and watershed health as documented in the statement of sustainability from the manufacturer. Several approaches are used to ensure sustainable supply of wood products, including federal, state, and local regulations, third-party certifications, best management practices, and an ASTM standard D7612. The use of mass timber with lumber that meets third-party forest or fiber sourcing certification is not a requirement.</i></p>

2.4	0 – 75 points	<p><b>Mass Timber Value and Benefits</b></p> <ul style="list-style-type: none"> <li>• Explain the project team’s reason for building with mass timber.</li> <li>• Explain any tangible and intangible benefits that using mass timber will provide to the project team, project owner, and community.</li> <li>• Describe any plans to develop construction cost estimates comparing a mass timber design for this project with another design using traditional materials. Comparisons should include the installed cost, required finishes, construction equipment costs, and impact of construction schedule on costs.</li> </ul>
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**Section 3: Sustainability & Resiliency – 125 points**

3.1	0 – 100 points	<p><b>Carbon Impact of the Structure</b></p> <ul style="list-style-type: none"> <li>• Provide an estimate of the carbon reduction and storage benefits of the proposed project relative to other material options. This can be determined using the <a href="#">WoodWorks Carbon Calculator</a> or a similar tool.</li> <li>• Describe results from or plans to perform a WBLCa, structural LCA, or otherwise demonstrate influence on reducing the building’s carbon footprint, and/or related carbon accounting analysis. Explain how these efforts compare the proposed mass timber solution to other material alternatives.</li> <li>• How will the project team share this information to advance the mass timber market?</li> </ul>
3.2	0 – 25 points	<p><b>Sustainability Goals</b></p> <ul style="list-style-type: none"> <li>• Explain any other sustainability goals for the project including any sustainable building certification program goals (e.g., Living Building Challenge, LEED, Passive House, etc.).</li> </ul>

## Section 4: Impact – 225 points

4.1	0 – 100 points	<p><b>Market Impact</b></p> <ul style="list-style-type: none"> <li>• Explain how this project will increase the acceptance and use of mass timber by design and construction professionals. How is the project repeatable and scalable?</li> <li>• Explain how the mass timber solutions have the potential to help advance code and market adoption of mass timber buildings.</li> <li>• What building construction market sectors can be positively impacted by this project? What is the construction market size of these sectors? How does the impact of this project grow the U.S. mass timber and solid-sawn lumber markets and strengthen the domestic mass timber supply chain?</li> </ul> <p><i>Preference will be given to building types where mass timber is currently underutilized but has great opportunity, such as buildings in the six- to 18-story range, warehouse distribution facilities, big-box retail, and healthcare.</i></p>
4.2	0 – 25 points	<p><b>Economic Development</b></p> <ul style="list-style-type: none"> <li>• Describe how the project will influence the economic development of the community where it is located and increase opportunities in rural communities.</li> </ul>
4.3	0 – 100 points	<p><b>Outcomes</b></p> <ul style="list-style-type: none"> <li>• Describe the correlation between the use of mass timber materials and the reduction of carbon emissions for your project.</li> <li>• Summarize the information that will be collected – and will be shared if selected – during the project that helps demonstrate to others the viability, application, cost-effectiveness, and carbon reduction and sequestration benefits of mass timber construction in the U.S.</li> </ul>

### **Proposal Document Structure**

**Project teams should organize their proposal in a manner that aligns with the four-part scoring structure described below.** Failure to do so may result in missed points and a lower overall score.

## Reporting and Access Requirements for Recipients

Reporting requirements for recipients will be defined in the funding agreement but will likely include the following information. Regular communication between the project teams and competition organizers will be implemented.

Information sharing requirements include the following. Results may be shared publicly.

- The recipient will provide details of any WBLCA or structural LCA that informed the project design.
- The recipient must make available material quantities and costs for further analysis.

Access to technical information and business cost data will support case studies developed by the competition organizers. Recipients will grant the following.

- Access and permission to use project photos by the SLB, the American Wood Council, Think Wood, WoodWorks, and the USDA FS for use in promotional materials (e.g., websites, case studies, and social media).
- Access to the jobsite for project tours in collaboration with the recipient.
- Access to jobsite for collecting data that inform future projects and solutions.
- Data resulting from tests performed to validate design approaches.
- Access to mass timber cost data for WoodWorks internal use in tracking cost trends and mass timber efficiencies.
- Notes and results from discussions and project reviews by the AHJ.
- Development and access to a construction report (including a project timeline with mass timber construction timeline identified separately).
- Insurance data to assist in the analysis of current rates and trends.
- Development financials to create a WoodWorks business case report.
- Lessons learned on the project for potential use in a case study and to generally help inform others interested in pursuing mass timber projects.

## Deliverable and Funding Schedule

The funding agreement will specify four deliverables and disbursement of funds along the following timeline.

### ***Phase 1: Schematic Design and Design Development – 15 percent of funds***

A report of milestones met during the period (including results obtained and description of performance measures, where applicable), and identification of any concerns, details, and mitigation plans regarding these issues.

### ***Phase 2: Construction Documents and Approval – 50 percent of funds***

A financial report outlining eligible costs incurred by task, receipts demonstrating expenses related to eligible costs, and proof of payment.

### ***Phase 3: Construction and Building Completion – 25 percent of funds***

A financial report that demonstrates how the funds were spent, with a declaration as to the total amount of contributions or payments received from other sources.

### ***Phase 4: Post-Construction – 10 percent of funds***

Data including construction documents and material quantities for further WBLCA and/or related carbon accounting analysis.

## Competition Entry Instructions

To submit a project entry: 1. Complete all fields within the [online form](#). 2. At the same time, upload a proposal document as instructed at the bottom of the webpage. Submitters will see a message confirming receipt of the submission. For technical assistance with the entry form, contact the [site administrator](#).

## Inquiries

All inquiries should be submitted by email to [netzerocompetition@woodworks.org](mailto:netzerocompetition@woodworks.org).

## About



### *About the Softwood Lumber Board*

The Softwood Lumber Board (SLB) is an industry funded initiative established to promote the uses as well as the environmental and economic benefits of softwood lumber products. Programs and initiatives supported by the SLB, including American Wood Council, Think Wood, and WoodWorks, focus on increasing the demand for lumber products in the United States. For more information, visit [www.softwoodlumberboard.org](http://www.softwoodlumberboard.org).

### *About the USDA Forest Service*

The USDA Forest Service has brought people and communities together to answer the call of conservation for more than 100 years. Grounded in world-class science and rooted in communities, the Forest Service connects people with nature and to each other. The Forest Service cares for shared natural resources in ways that promote lasting economic, ecological, and social vitality. 193 million acres of national forests and grasslands contribute more than \$13 billion to the economy each year through visitor spending alone. The Forest Service also maintains the largest forestry research organization in the world and assists state and private landowners, helping to steward about 900 million forested acres in the U.S., including 130 million acres in urban areas, which most Americans now call home.

### *About WoodWorks*

WoodWorks – Wood Products Council provides education and free technical support related to the design, engineering, and construction of commercial and multifamily wood buildings in the United States. A non-profit staffed with structural engineers, architects, and construction experts, WoodWorks has the expertise to assist with all aspects of wood building design. For assistance with a project, visit [www.woodworks.org/project-assistance](http://www.woodworks.org/project-assistance) or email [help@woodworks.org](mailto:help@woodworks.org).