A Current-to-Future Analysis for Mass Timber in the Northern Forest

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Introduction

Mass timber products like cross-laminated timber (CLT) panels and glue-laminated timber (glulam) beams are gaining momentum as sustainable construction materials. The Northeastern United States – with its abundant forests and dense urban centers – has an opportunity to benefit from mass timber adoption. However, the region's supply chain for CLT and glulam is still nascent, with **no CLT manufacturing yet located in the Northeast and only a single regional glulam producer (Unadilla Laminated Products in NY)**. This report analyzes the current supply chain components in the Northeast and explores the future outlook and feasibility of a robust regional CLT/glulam supply chain. Key topics include raw material sourcing, existing production capacity, distribution channels, end-user demand, transportation logistics, supplier networks, code and policy drivers, future investment opportunities, and infrastructure needs.

1. Current State of the Northeast Mass Timber Supply Chain

1.1 Raw Material Sourcing and Forestry Infrastructure

The Northeast is rich in timber resources suitable for mass timber production. Softwood species prevalent in the region – such as spruce, fir, eastern hemlock, and pine – can serve as raw materials for CLT panels, glulam beams, and laminated veneer lumber (LVL). Recent research confirms that **eastern hemlock, historically underutilized, is a viable species for CLT when properly graded and dried** (Local Species Cross-Laminated Timber Nearly Commercial in the Northeast - Northeastern Loggers Association & Eastern Hemlock CLT Certified). Eastern spruce-fir (often sold as SPF-S lumber) has long been used in construction and is also suitable for mass timber. White pine, another abundant regional species, may play a role in non-structural layers or hybrid panels. To fully leverage local species, some coordination is needed: lumber grading standards and CLT certification (ANSI/APA PRG 320) must accommodate Northeast species. Progress is being made – grading agencies and APA have worked to include eastern hemlock in certified CLT layups. In practice, a future Northeast CLT plant might use a mix of species (spruce-fir, hemlock, pine) in different panel layers to optimize strength and cost, once proper testing and certifications are in place.

Wood Species Utilization by Leading Mass Timber Manufacturers: Table 1 below highlights several major CLT, glulam, and LVL manufacturers in North America and Europe, their approximate annual production capacity, and the wood species they commonly use. Notably, many utilize species that are also found in the Northeastern US (spruce, fir, pine, hemlock), underscoring the potential for the region's timber to feed mass timber production, though their current regions of lumber sourcing are typically outside of the Northeast.

Manufacturer (Location)	Products	Annual Capacity	Primary Species
SmartLam NA (MT & AL, USA)	CLT panels, glulam	~170,000 m³ (combined) (SmartLam wants to become the biggest CLT producer in North ...)	Southern Yellow Pine (AL); SPF spruce-pine-fir (MT)
Nordic Structures (Quebec, CA)	CLT panels, glulam	80,000 m³ CLT (); ~95,000 m³ glulam (40 million bf) ([PDF] RESIDENTIAL DESIGN - Nordic Structures)	Black Spruce (Eastern SPF) (Nordic X-Lam)
Element5 / Hasslacher (ON, CA)	CLT panels, glulam	~50,000 m³ (CLT)	SPF (Black spruce, jack pine mix)
Unalam (New York, USA)	Glulam beams	Custom; ~6,000 m³ (est.)	Southern Pine & DF
Boise Cascade (USA)	LVL, glulam, I-joists	~1 million m³ (LVL, across mills)	Douglas Fir (NW mills); Southern Pine (SE mills)
Stora Enso (EU – AT, CZ, FI)	CLT, LVL, glulam	~400,000 m³ CLT; 100,000 m³ LVL	European Spruce (CLT, glulam); Spruce/Scots Pine (LVL) ([PDF] Nordic X-Lam PR-L306 Nordic Structures)
Binderholz (Austria/Germany)	CLT, glulam	~250,000+ m³ CLT	European Spruce (some Pine/Larch)
KLH (Austria)	CLT panels	~150,000 m³ CLT	European Spruce

Table 1: **Major Mass Timber Manufacturers and Wood Species** – Many producers use spruces and pines similar to Northeast species, and some (like Nordic) use Eastern SPF and even hemlock (in testing) for CLT (Nordic X-Lam). (Capacity figures are approximate; NA = North America, EU = Europe.)

Challenges: To mobilize these species at scale, the supply chain must ensure **consistent grade and volume**. Many Northeast sawmills are smaller than the giant mills out West or in the South, so a mass timber plant might need to coordinate inputs from multiple mills. This fragmentation can be managed via cooperative agreements (e.g. a consortium of regional sawmills supplying a CLT plant, see Section 2.5). Another challenge is drying capacity – CLT requires lumber dried to ~12% moisture content, but not all regional mills currently kiln-dry to that level. Increasing kiln capacity or installing on-site kilns at a future plant will be necessary). Dimensional tolerances are yet another challenge, as glulam and CLT require tolerances that are difficult to achieve at typical sawmills and therefore require re-planing at the mass timber manufacturer's facility. On the positive side, creating a new market for underused species (e.g. hemlock affected by pest infestations) could improve forest economics and health. Forest

modeling in Maine indicates a stable 50-year spruce-fir supply that could support a CLT mill without strain – the raw material is there if the supply chain can organize around it.

Local Wood Species in CLT Production:
In the context of wood species, grade and volume, it is helpful to take a closer look at 1) what is currently being produced and is commonly available for structurally graded lumber produced in the northeast, and 2) how the structural properties of the resulting CLT panels and glulam beams and columns compare to those of mass timber products produced outside of the region.

Panel products (CLT) commonly utilize #2 grade lumber for all laminations and input lumber as a cost-optimal solution. The use of Machine Stress-Rated (MSR) lumber in panel products is less common and more costly, reserved for projects where longer spans are necessary and the added costs associated with it is justified through other aspects of the project. As a specific example, a manufacturer of CLT panels produced with Eastern Hemlock Tamarack (EH-T) lumber use all #2 grade EH-T laminations. Similarly, certified SPF-S CLT layups use #2 grade SPF-S lumber for all laminations. In contrast, several eastern Canadian CLT manufacturers produce E1 grade CLT which uses 2100f-1.8E MSR SPF for all longitudinal (major axis) laminations and #1/#2 grade SPF transverse (minor axis) laminations. The option which utilizes SPF MSR longitudinal laminations provides significant increases in allowable bending stress and stiffness as seen in the table below. However, a cost premium also results. Additionally, #2 grade SPF-S or EH-T is much more readily available from Northern Forests than MSR SPF-S.

CLT Panel	**Lumber Laminations**	**3-ply (4.125”) CLT Allowable Bending Stress (FbSeff)**	**3-ply (4.125”) CLT Stiffness (Eleff)**
Sterling V4+	#2 SPF-S	1,800 lb*ft/ft	74 lb*in^2/ft
Binderholz 100 3s-2	Equivalent to SPF Select Structural	2,575 lb*ft/ft	85.9 lb*in^2/ft
Element5 E1M10	2100f-1.8E MSR SPF (major axis laminations) #1/#2 SPF (minor axis laminations)	4,875 lb*ft/ft	122 lb*in^2/ft

Sources:
https://icc-es.org/report-listing/esr-5053/
https://icc-es.org/wp-content/uploads/report-directory/ESR-4081.pdf
https://www.apawood.org/download_pdf.ashx?pubid=28837e59-6f23-43c0-af30-eccce82ac735&bp=1

Local Wood Species in Glulam Production:
As an engineered wood product, glulam structural properties are optimized by utilizing different strengths of lumber throughout the depth of the member, aligning with the location of highest structural stresses. In a beam, this typically means that the top of the beam is highly stressed in compression and the bottom of the beam is highly stressed in tension. The middle of the beam

depth has significantly lower stresses. As such, it is common for the top and bottom 10-20% of the beam depth to have high strength lumber, and the middle of the beam to have lower grade lumber.

While a glulam manufacturer can produce glulam using any custom layup - meaning that manufacturer decides what strength(s) of lumber they want to use in the glulam layup and where within the depth of that member the different laminations will be located - it requires an analytical process of verifying member properties. Using one of the predefined glulam layups within the standard ANSI 117 *Standard Specification for Structural Glued Laminated Timber of Softwood Species* enables the manufacturer and user to utilize the predefined structural values from ANSI 117 and the NDS Supplement without the need for full scale destructive testing or analytical models.

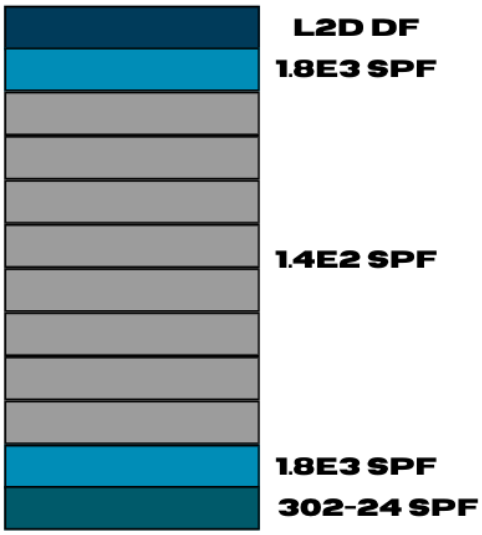
Per Section 3.2 of ANSI 117, SPF and SPF-S are both included in that document's SPF glulam species grouping.

There are only 2 defined SPF-S glulam layups within ANSI 117:

- 24F-E/SPF1: Balanced layup (i.e. laminations at the top and bottom of the member are matched)
- 24F-E/SPF3: Unbalanced layup (i.e. laminations at the top and bottom of the member are dissimilar)

The structural properties for both of these predefined layups are similar to, and therefore competitive with, commonly available glualm using Douglas Fir or Southern Yellow Pine laminations. This is important as it establishes that, in theory, glulam produced with lumber from the northeast can compete on a structural capacity basis with glulam sourced from outside of the region. However, the structural properties of the individual lamination required to achieve these beam and column values deserves a closer look.

For example, an 18" deep glulam using layup 24F-E/SPF3 would consist of the following laminations:



The graded lumber in this layup consists of the following:

- Top 5% of the Beam Depth: L2D: Douglas Fir (or approved alternative species) meeting the requirements of L2 Dense lamination grading
- 10% of the Beam Depth Just Below the Top Tension Lamination(s) and Just Above the Bottom Compression Lamination(s): 1.8E3 SPF = SPF (or SPF-S) with an E = 1.8x10^6 psi
    - Using commonly available SPF-S lumber, this would be 2100F-1.8 MSR SPF-S
- Middle 70% of the Beam Depth (Core): 1.4E2 SPF = SPF (or SPF-S) with an E = 1.4x10^6 psi
    - Using commonly available SPF-S lumber, this would be 1650F-1.5 MSR SPF-S
- Bottom 5% of the Beam Depth: 302-24 SPF
    - Using commonly available SPF-S lumber, this would be 2400 F-2.0 MSR SPF-S (if available) or more likely SPF

None of the structural property requirements of the above laminations could be met with SPF-S #2 grade lumber. Therefore to provide glulam beams and columns with SPF-S lumber sourced from the Northern Forest region, and which are competitive with Douglas Fir and Southern Pine glulam in terms of structural capacity, higher strength lumber, specifically MSR SPF-S, is required. Specifically, using the above example for a 24F-E/SPF layup, 30% of the depth is 2100 or 2400 psi MSR and 70% of the depth is 1650 psi MSR.

There is currently one source for MSR SPF-S within the Northern Forest region, Pleasant River Lumber in Maine. There are currently no sources for MSR EH-T.

Resulting Needs of Locally-Sourced Lumber in Mass Timber Construction

Summarizing the above, if using mass timber products made from wood sourced within the Northern Forest region, it would be common for all of the mass timber panel products within a mass timber building to utilize #2 grade SPF-S lumber, and for all of the glulam within a mass timber building to utilize MSR SPF-S lumber. A common metric for the utilization of timber in a given building is the timber use intensity (TUI). This metric is a ratio of the volume of mass timber per area (SF) of building. A common TUI for a multi-family building in the 2-5 story range is 0.7 CF/SF (cubic feet of timber per square foot of building).

Further, the volume breakdown on a mass timber project where the vertical framing systems are glulam beams and columns and the horizontal framing systems are mass timber panels (CLT, DLT, NLT, GLT) is approximately 30% of the total timber volume being beams and columns and 70% of the total volume being panels.

Using the abovementioned metrics, an example 3 story, 20,000 SF multi-family housing construction project would utilize the following timber volumes:

- Total timber volume = (0.7 CF/SF)*(20,000 SF) = 14,000 CF of timber
- Total glulam volume (MSR SFP-S) = (0.3)*(14,000 CF) = 4,200 CF = 50,400 board feet of MSR SPF-S
    - of this total, 15,120 board feet is 2100 psi SPF-S MSR and 35,280 board feet is 1650 psi SPF-S MSR)
- Total panel volume (#2 SPF-S) = (0.7)*(14,000 CF) = 9,800 CF = 117,600 board feet of #2 SPF-S or #2 EH-T

Therefore in this 20,000 SF building, we would see the following approximate SPF-S (or EH-T) use:

- #2 SPF-S or #2 EH-T: 117,600 board feet
- 1650 psi MSR SPF-S: 35,280 board feet
- 2100 or 2400 psi MSR SPF-S: 15,120 board feet

1.2 Existing CLT and Glulam Manufacturing in the Northeast

As of early 2025, **there are no CLT manufacturing facilities located in the Northeastern U.S.** (defined here as New England, and NY). This means any CLT panels used in Northeast construction projects are sourced from outside the region. By contrast, glulam production has a small foothold – the only established **glulam manufacturer in the Northeast is Unadilla Laminated Products (Unalam) in Sidney, New York**, in operation since 1963. Below is an overview of current domestic production relevant to the Northeast supply chain:

- **Cross-Laminated Timber (CLT):** No CLT plants exist in New England or the Mid-Atlantic at this time. Pioneering Northeast projects have had to import panels. In many cases, CLT is shipped from domestic suppliers in other regions (e.g. SmartLam's factory in Dothan, Alabama, or Structurlam's Arkansas plant [now owned and operated by Mercer]) or from international producers in Canada or Europe. For example, the first

commercial-scale mass timber buildings in Maine – Bowdoin College's new academic halls completed in 2023 – sourced all of their structural wood (CLT panels and glulam members) from Austria's KLH, due to the lack of any local CLT supplier. This imported material traveled thousands of miles (arriving via an East Coast port), slightly reducing the carbon advantage but underscoring the gap in local manufacturing. Another notable project, the University of Massachusetts Amherst's John W. Olver Design Building (completed 2017), used CLT floor panels fabricated in Quebec and glulam from Quebec and Austria, since no U.S. Northeast producers were available at the time). In short, **all CLT for Northeast projects is currently inbound from elsewhere** – a mix of U.S. West, U.S. South, Canada, or Europe.

- **Glue-Laminated Timber (Glulam):** Unalam (Sidney, NY) is the region's primary (and sole large-scale) glulam beam producer, supplying projects across the Northeast. Unalam manufactures custom structural members – straight or curved glulam beams, columns, trusses, arches – and keeps an inventory of common beam sizes in stock for immediate shipment. They typically use Southern Pine or imported Douglas Fir lumber as lamstock, since historically local species like hemlock were not yet certified for glulam; however, this may evolve as grading rules change. Unalam's presence effectively **anchors the glulam supply** in the Northeast: architects and builders can source standard roof/floor beams locally without importing every glulam from the West Coast. Aside from Unalam, most other glulam used in the Northeast is shipped in from large national manufacturers (e.g. Boise Cascade, Rosboro, Western Structures in the Pacific Northwest), from Canadian producers, or from European manufacturers. There are also small timber fabricators in the region, but they typically assemble structures using lumber and glulam sourced elsewhere rather than manufacturing glulam from scratch.

- **Laminated Veneer Lumber (LVL) and Engineered Wood:** The Northeast has no LVL mill currently, but LVL headers and I-joists are widely used in construction and are stocked by regional lumber yards. These products are made by companies like Boise Cascade, Weyerhaeuser, LP, and West Fraser at mills outside the region. For example, Boise Cascade's distribution centers regularly supply LVL beams (usually Southern Pine or Douglas Fir LVL) to Northeast markets. Thus, while LVL is available to builders, it is **imported** from factories in Canada or other U.S. regions. This is another link in the supply chain that could potentially be localized in the future if demand grew (several Northeast sawmills produce the veneer species needed for LVL, like spruce and fir).

- **Production Capacity Context:** The absence of Northeast CLT factories is notable given the growing capacity elsewhere, with concentrations in the Pacific Northwest, the South, and Eastern Canada (Cross-Laminated Timber (CLT) panels Fact Sheet | VCE Publications | Virginia Tech). In Eastern North America, SmartLam's Dothan Alabama facility (and major glulam line expansion), Mercer's Conway Arkansas facility, and Element5's glulam expansion represent significant capacity increases that surround the

Northeastern US. Despite its wood resource and construction market, the Northeast remains without a CLT facility.

1.3 Distribution, Logistics, and Storage Channels

With current production centered outside the Northeast, the supply chain relies on long-distance logistics to get CLT and glulam into regional projects. Several key aspects of distribution and storage in the current context include:

- **Direct Project Supply vs. Inventory:** CLT panels are typically made-to-order for each project, with specific dimensions and cutouts, so they are not mass-stocked in local warehouses. Distribution often occurs **just-in-time directly from the manufacturer to the construction site.** A project in Boston or New York may receive a convoy of flatbed trucks coming from Alabama, Montana, or Quebec, timed to the installation sequence. Glulam beams, on the other hand, have some standardization (common sizes for ridge beams, purlins, etc.), and as noted, Unalam keeps an inventory of standard beams indoors for quick shipment. Large building material distributors (e.g. Boise Cascade, local lumber yards) also stock commodity LVL headers and glulam for conventional construction, but those are typically Southern Pine or Western species products serving general building needs, not necessarily the long spans or custom profiles used in signature mass timber structures.

- **Transportation Modes: Trucking is the primary mode of delivery** for mass timber into the Northeast. CLT panels, which can be quite large (often 8–10 feet wide by up to 64 feet long), are usually shipped on flatbed trucks with protective wrapping materials. A single truck can carry several panels, and for cross-country shipments, panels might be trans-loaded – e.g. a manufacturer in the Pacific Northwest might send a rail flatcar with panels part of the way to a regional rail yard, then transfer to trucks for final miles. Manufacturers in the Southeast (e.g. Alabama) or Eastern Canada typically rely on 18-wheelers for the entire trip. Given the Northeast's good highway network, trucking from Southeastern states or from Ontario/Quebec manufacturing facilities is logistically straightforward (though not cheap). Shipping times from, say, Alabama to New England are on the order of 2–3 days by truck for a just-in-time delivery. In the case of overseas suppliers (e.g. Austria), CLT panels or glulam members are loaded into containers or break-bulk cargo and arrive via East Coast ports (for Bowdoin's buildings, the Austrian timber likely came through the Port of Boston or New York). Once unloaded, they travel by truck to the site. Overall, road transport dominates for both inbound lumber to fabrication sites and outbound finished components to job sites.

- **Known Bottlenecks:** Oversize loads are a logistical consideration – any load more than 8.5 feet wide is, by definition, an oversize load requiring state permits (and over 10 feet often requires escort vehicles) (North Carolina Oversize Permit, Wide and Heavy Haul Information). Some CLT panels are 10 or more feet wide, meaning each truckload needs oversize permits in every state it travels through. This adds cost and coordination;

manufacturers often design panel dimensions to fit within trucking limits (max ~10′ wide, ~40′ long) to minimize escorts. Another bottleneck is back-haul and distance: a truck delivering CLT from Alabama to Boston must travel ~1,300 miles round-trip. The delivery cost can be significant – on the order of several thousand dollars per load – though in the context of an entire building, transportation might be only a small fraction of total cost (one study noted shipping can be <1% of delivered mass timber cost) ([PDF] Mass Timber and Other Innovative Wood Products in California). Still, long hauls introduce schedule risk (delays, weather, etc.) and carbon emissions. Rail could be more cost-efficient per ton-mile, but few CLT projects have used rail so far due to scheduling inflexibility; this could change as volume grows or if a Northeast rail spur is near a future plant (see Section 2.4). Lastly, border logistics can be a bottleneck when sourcing from Canada or Europe (customs clearance, tariffs, etc.), though engineered wood generally flows freely under trade agreements.

- **Specialized Intermediaries:** Because mass timber is a specialty product, **specialized firms often act as intermediaries** in the supply chain. General contractors in the Northeast may work with integrators like Timberlab (a Swinerton subsidiary) or with WoodWorks' sourcing network to procure mass timber. These intermediaries coordinate orders with manufacturers, arrange shipping, and may even perform pre-fabrication or CNC cutting. Timberlab, for instance, operates a CNC workshop in Greenville, SC to process mass timber closer to East Coast job sites. Such players have noted that a "more robust supply chain" is needed to meet rising demand, implying current distribution channels are stretched across long distances. In practice, a Northeast developer can place orders through domestic suppliers' sales offices or through design-build timber contractors who handle supply end-to-end. As the market matures, we may see local distributors stock small CLT panels or demo units, but for now it remains mostly direct shipping per project.

- **Storage and Pre-Assembly:** Once delivered to the region, CLT panels are usually off-loaded at the jobsite or a nearby staging area. There are no known dedicated mass timber storage yards in the Northeast, partly because panels shouldn't sit too long exposed to weather (to avoid moisture pickup) and because each panel is made for a specific design. For glulam, Unalam's NY facility doubles as a storage hub for their products. Some construction projects arrange short-term warehouse space or off-site staging yards to store components if the site is tight (e.g. renting a lot to hold a few truckloads, then feeding the site just-in-time). In the future, if a Northeast CLT plant is established, it may include a yard to stock *some* standard panels or modular assemblies, but at present, **inventory in the supply chain is minimal – every major CLT panel or glulam piece is en route to a specific destination** (as is common industry practice outside the region as well).

1.4 Regional End Users and Demand Segments

Demand for mass timber in the Northeast is emerging from a mix of building types. Early adopters have been institutional and commercial projects emphasizing sustainability, as well as

some developers of multi-family housing looking for faster construction alternatives. Key segments include:

- **Higher Education and Institutional:** Universities and colleges (like Bowdoin College, UMass Amherst, Rutgers, etc.) have been prominent early end-users, often for academic buildings, student centers, or research facilities that showcase sustainable design. These institutions are drawn by the low carbon profile and aesthetic of mass timber, and they often have the funding and desire to pursue innovative construction. For example, Bowdoin's new Mills Hall and Center for Arctic Studies (opened 2023) are marquee mass timber buildings in Maine (Bowdoin College's Mass Timber Buildings Support Its Carbon-Neutral Approach - Think Wood). Similarly, UMass Amherst's Design Building (2017) was one of the first modern mass timber buildings on the East Coast.

- **Commercial Offices and Mixed-Use:** Developers in urban centers like Boston and New York are increasingly exploring mass timber for office and mixed-use projects, especially mid-rise (6–12 story) buildings. Projects in the pipeline include office buildings in Newark, NJ (the Riverfront Square development, 11-story towers by MGA) (Domestic Mass-Timber Industry Expands with Two New Planned CLT Facilities for Maine | Article | EESI) and proposals for timber commercial buildings in Boston and Providence. These users value the biophilic appeal for tenants and the speed of construction. That said, until codes fully allow taller timber (see Section 2.3), many commercial projects are still incorporating timber as hybrid (timber + steel or concrete podiums).

- **Multi-Family Residential:** There is growing interest in mass timber for apartment buildings and affordable housing in the Northeast. The appeal is faster construction and less disruption in dense neighborhoods. For instance, a mass timber affordable housing project was completed in New Haven, CT (an all-timber top two floors added to an existing structure), and developers like Spiritos Properties are championing timber for housing in New England (The push for mass timber as a sustainable housing solution in New England | New Hampshire Public Radio). So far, most residential mass timber in the region has been mid-rise (4–6 stories, within current code limits for wood), but proposals for taller timber residential towers are appearing as codes evolve.

- **Public and Civic Buildings:** Municipalities are starting to consider mass timber for schools, libraries, and public buildings. For example, Maine is exploring using CLT for a highway rest area and a few public safety buildings to support the local industry. The federal government has also provided grants (e.g. USDA Wood Innovations grants) to catalyze demonstration projects like a proposed timber roof for a municipal ice rink in Vermont. These public-sector projects can help spur demand and showcase applications.

- **Specialty Structures:** Niche uses such as pedestrian bridges, pavilions, and even highway noise barriers are being tried with mass timber. For instance, a **mass timber noise barrier prototype** has been studied for a highway in the region (Mass Timber:

Key Risks & Benefits for Property Owners - CBIZ), and some park pavilions in New York have used glulam. While these are smaller volume uses, they help broaden the market.

Overall, as of 2023 there were **54 commercial mass timber buildings built or under construction and another 88 in design in the Northeast**, according to WoodWorks (Local Species Cross-Laminated Timber Nearly Commercial in the Northeast - Northeastern Loggers Association) – a number that is growing each year. This pipeline of projects is crucial to justify a future local supply chain. The next section examines how policy and codes are affecting this demand.

2. Future State and Feasibility of a Northeast CLT/Glulam Supply Chain

2.1 Planned or Proposed Manufacturing Facilities in the Northeast

Momentum is building to establish mass timber production in the region. In the late 2010s, two companies announced plans for **CLT factories in Maine** – LignaCLT Maine and SmartLam North America. LignaCLT (a North Carolina startup) aimed to redevelop the former Great Northern paper mill in Millinocket, ME into a 300,000 sq ft CLT and glulam plant (projected $30M investment, 100 jobs) (Redevelopment of Millinocket mill has setback, as anchor tenant pulls out | Mainebiz.biz). SmartLam, the first U.S. CLT producer (based in Montana), also announced in 2018 it would open a CLT facility in Maine (Redevelopment of Millinocket mill has setback, as anchor tenant pulls out | Mainebiz.biz). These announcements were welcome news for a state hit by paper mill closures, signaling a shift “from Paper to Pre-Fab” (Domestic Mass-Timber Industry Expands with Two New Planned CLT Facilities for Maine | Article | EESI). However, progress has been mixed: LignaCLT ultimately pulled out in 2018 due to site delays (Redevelopment of Millinocket mill has setback, as anchor tenant pulls out | Mainebiz.biz), and SmartLam instead partnered on a smaller-scale operation in Madison, ME (at a lumber mill site) rather than a large new factory.

Aside from Maine, New York has seen interest as well. **Element5**, an Ontario-based CLT manufacturer, considered upstate New York for a plant in 2019, though they ultimately chose Ontario and Quebec for their facilities (likely due to incentives and proximity to Canadian forests). New York State’s government has actively studied mass timber supply chain opportunities – a 2022 state report identified potential sites and offered grants for wood product manufacturing. To date no NY mass timber mill has been built, but the groundwork (feasibility studies, incentives) is being laid.

Looking ahead, **potential sites** for Northeast mass timber production often focus on repurposing former paper mills or sawmills. These sites offer large industrial buildings, rail spurs, and a local workforce experienced in wood products. Examples include Millinocket and East Millinocket, ME (former paper mill sites with rail access), Madison, ME (former paper mill, now a sawmill/CLT pilot site), and **Groveton, NH** (a closed paper mill site in the North Country).

Interest also exists in the Albany, NY and Pennsylvania Northern Tier areas, leveraging mixed hardwood-softwood forests (including perhaps hardwood CLT research, though most CLT is softwood). At least one **LVL manufacturer** has also reportedly scouted Maine (nearly all LVL in the East is shipped from Canada or the South).

In summary, there are no operating Northeast CLT plants yet, but multiple proposals and business plans exist. The next 2–3 years will be critical: if even one CLT or LVL facility breaks ground, it could catalyze a cluster (suppliers, secondary processors) in the region. State and federal support – through grants, loans, or anchor customer commitments – may determine which of these plans come to fruition (see Section 2.5 on feasibility and investment requirements).

2.2 Market Demand Outlook for CLT and Glulam in the Northeast

Demand for mass timber in the Northeast is expected to grow rapidly over the next decade, given national trends and local sustainability goals. **Forecasts:** A 2017 analysis by Pöyry projected significant growth in U.S. CLT demand, with potential doubling of mass timber usage every 2 years through 2030 under favorable conditions. While that pace may be optimistic, recent data show a steep climb: as of June 2019, 599 mass timber projects were built or in design in the U.S., with 88 of those in the Northeast. By 2023, the number of Northeast projects (built/underway/planned) exceeded 140 (Local Species Cross-Laminated Timber Nearly Commercial in the Northeast - Northeastern Loggers Association).

Several factors are driving this demand:

- **Sustainability and Climate Goals:** Major cities like New York and Boston have climate action plans that encourage low-carbon buildings. Private developers (e.g. in Boston's Seaport district) also see market value in touting timber's embodied carbon savings. This ethos suggests a policy tailwind for mass timber (e.g. potential carbon-based building codes or incentives).
- **Building Owner Acceptance:** The aesthetic and marketing appeal of timber (natural look, wellness benefits) is attracting commercial office developers looking to lure tenants. Higher education and tech sectors are particularly drawn to timber buildings. As more showcase projects (like Bowdoin's or a proposed mass timber addition to Boston's Fenway Center) get publicity, awareness grows among architects and owners.
- **Construction Industry Adoption:** Contractors are becoming more familiar with mass timber assembly, and some large firms now have dedicated timber teams. This reduces the perceived risk and cost adders. For instance, Consigli Construction, a major regional builder, has invested in mass timber expertise. As efficiency improves, cost premiums drop, making mass timber more competitive in bids.
- **Housing Need:** The Northeast's housing crunch could spur use of mass timber to speed up multifamily construction. Massachusetts and other states are exploring off-site construction to meet housing demand – mass timber fits into that as prefabricated panels. If cost hurdles can be overcome, this could open a large volume market (e.g. timber-framed mid-rise apartments as a greener alternative to steel/concrete mid-rises).

That said, there are **constraints on demand** growth: the higher upfront cost of mass timber (currently, CLT projects can be 0–10% more expensive than steel/concrete in raw structure cost, and code limitations on building height (discussed next). Also, the supply chain constraints (lack of local supply, longer lead times) can deter some projects. But these are expected to ease with time. Notably, some developers report that insurance costs for tall mass timber are still higher than for non-combustible structures (one source cites 5–7 times higher insurance premiums for a timber high-rise vs. concrete) (Two Case Studies on Insurance Pricing: Concrete/Masonry vs. Mass ...), which could slow adoption for the very tallest buildings. For low- and mid-rise, however, insurance is more manageable and mass timber competes well on schedule savings.

In summary, the Northeast demand outlook is very positive, provided the supply chain and codes evolve. The region likely could support one or two medium-size CLT plants by ~2030 based on projected building activity (CLT: The Great Wood Hope). In fact, the New England Forestry Foundation's 2017 study concluded that *"New England has sufficient forest resources to support CLT plants"* and that the region's sawmills produce plenty of spruce/fir that is suitable for CLT (CLT: The Great Wood Hope). The greatest demand in the near term is expected in low- to mid-rise commercial and institutional buildings (1–10 stories), and, with code changes, an eventual expansion to high-rise residential and office buildings in metro areas.

2.3 Policy Incentives, Building Codes, and Funding Programs

Public policy and building codes are critical factors in mass timber adoption. Several developments are shaping the playing field in the Northeast:

- **Building Code Adoption of Tall Timber Provisions:** The 2021 International Building Code (IBC) introduced three new construction types (Type IV-A, IV-B, IV-C) that allow mass timber buildings up to 18, 12, and 9 stories, respectively (Status of Building Code Allowances for Tall Mass Timber in the IBC). However, individual states must adopt these provisions for them to take effect. As of 2025, **code adoption varies by state** in the Northeast:
    - **Maine:** Maine was an early mover – in January 2021, the Maine Technical Codes Board voted to incorporate the 2021 IBC tall wood provisions into the state code via amendment (Maine Code Update - Mass Timber - Code Red Consultants) (Maine Code Update - Mass Timber - Code Red Consultants). By mid-2021, Maine officially allowed Types IV-A/B/C construction, meaning developers can build timber structures up to 18 stories as-of-right (with the required fire precautions) (Maine Code Update - Mass Timber - Code Red Consultants). This was a game changer for Maine: it eliminated the need for case-by-case variances for taller than 6-story timber buildings. Maine's code adoption has already encouraged proposals for timber high-rises in Portland.
    - **New York:** New York State is in the process of updating from the 2015/2018 IBC to newer codes. The 2020 NYS Building Code (in effect as of 2022) was based

on the 2015 IBC, which *recognizes CLT as a material* but **limits wood buildings to 6 stories** (Type IV or V) unless an alternative method is approved (CLT: The Great Wood Hope). Thus, outside NYC, timber buildings above 6 stories currently require special approval. The state is expected to adopt the 2024 IBC (which includes the tall timber provisions) in the coming years, but until then, mass timber high-rise projects must go through variance processes. Notably, the state has been supportive in principle – NY's code council has worked with the American Wood Council on this – but the formal adoption is pending. **New York City**, which has its own code, took a step in 2021: the latest NYC Construction Code (effective 2022) incorporated some 2015 IBC provisions including recognition of CLT. NYC now explicitly allows mass timber construction for buildings up to 85 feet (approx. 7 stories) and 6 stories for certain occupancy categories (be-exchange.org) (be-exchange.org). This was an improvement (previously heavy timber was more restricted in NYC). However, NYC did *not* yet adopt the 2021 IBC's 18-story allowance. Thus, within the five boroughs, timber buildings are capped at around 7 stories for now (be-exchange.org). There is active discussion in NYC to pilot taller timber (the City's Economic Development Corp launched a "Mass Timber Studio" to explore code changes) (Funded Program Has Helped 28 States to Adopt Mass Timber Code Provisions | SLB September 2023 Newsletter - Softwood Lumber Board) (Funded Program Has Helped 28 States to Adopt Mass Timber Code Provisions | SLB September 2023 Newsletter - Softwood Lumber Board), so further progress is likely. In short, **New York currently allows mid-rise timber, but not the full 18 stories yet.**

- **New Hampshire:** New Hampshire's state code was based on the 2015 IBC until recently. In 2022, legislation was passed to update the NH Building Code to the 2018 edition (with a grace period into 2023) (State Building Code Change 2022 | New Hampshire Building ...). As of early 2025, NH has **not adopted the 2021 tall wood provisions** statewide. This means mass timber buildings are generally limited to existing height limits (e.g. Type IV up to 6 stories). A developer can seek a code variance for taller structures, but it's on a case-by-case basis. However, NH is aware of the issue – the Building Code Review Board has discussed the 2021 provisions ([PDF] 2021 IBC Committee Report to the NH Building Code Review Board ...) and may include them in a future code update. Until then, mass timber in NH will likely stick to low- and mid-rise projects (e.g. a 4-story timber apartment in Concord would be fine, but an 8-story would need special approval). We note that NH has relatively less urban high-rise demand, but for consistency with neighboring states it will need to adopt the new code eventually.
- **Vermont:** Vermont's statewide code (Fire & Building Safety Code) is currently based on the 2015 IBC for commercial buildings (Codes and Standards | Division of Fire Safety). Thus, like NH, Vermont does not yet allow the new tall timber types. Any timber building over 6 stories in VT would require an alternative compliance path. Vermont typically updates codes on a slower cycle; an update to the 2021 IBC could be a few years out. The state has, however, been

supportive in principle: in 2020, Vermont's legislature discussed mass timber in the context of climate action, and the state Division of Fire Safety has been educating officials on the 2021 code changes (March 2022 MASS TIMBER - ICCBSAVT). For now, developers in VT are proceeding with mass timber within the current limits (e.g. Burlington's CityPlace project considered a 6-story timber option). The implication for VT is that any building taller than ~75 ft requires either non-combustible structure or a variance for timber – a deterrent until code updates.

Implications for Developers: These code differences mean that, for example, a 10-story timber condo building is feasible "by right" in Portland, Maine (since Maine adopted 2021 IBC), but would face hurdles where 2021 IBC has not yet been adopted. Developers must closely track code adoptions; many are advocating at the state level for swift uptake of the 2021 provisions. It's worth noting that **28 states nationwide have adopted the 2021 IBC tall mass timber provisions (statewide or in major jurisdictions) as of 2023, up from 21 states in 2022** (Funded Program Has Helped 28 States to Adopt Mass Timber Code Provisions | SLB September 2023 Newsletter - Softwood Lumber Board). In the Northeast, Massachusetts and Maine are among these; New York and others are pending. This patchwork affects where cutting-edge projects land. Nonetheless, even under older codes, **mass timber can still be used in low-rise and mid-rise buildings**, so current code gaps mainly impact the upper end (7+ stories) of potential projects.

- **Fire and Safety Regulations:** Beyond building height, local interpretations of fire codes can impact mass timber. All Northeast states require sprinklers in most buildings where mass timber is used (as they would for steel or concrete in those occupancies). The 2021 code changes include robust fireproofing requirements for tall timber (e.g. Type IV-A must have all wood surfaces fully encapsulated with gypsum board for a 2- or 3- hour rating). Some states or cities could impose additional requirements – for instance, a fire official might ask for non-combustible protection of connections, or express concern about firefighting tactics for exposed wood. Education is improving this: fire marshals in ME, MA, and others have been engaged through the WoodWorks and AWC seminars demonstrating that heavy timber chars and can meet ratings (CLT: The Great Wood Hope). In fact, **mass timber elements have proven they can achieve 2-3 hour fire resistance without catastrophic failure (the char layer insulates the core) (CLT: The Great Wood Hope)**, but convincing all local officials is an ongoing process. So far, Northeast projects have successfully gotten approvals by demonstrating code compliance or using performance-based design. For example, the Olver Design Building in MA (built under 2015 code) obtained a code variance by providing extra fire testing data. As more projects come online under the 2021 code, this process will standardize.

- **Incentives and Funding:** Several public incentives are in play to boost the mass timber supply chain:

- The **USDA Wood Innovations Grants** and the related Community Wood Grants program have funded feasibility studies, pilot projects, and even equipment for mass timber in the Northeast. For instance, the North East State Foresters Association (NESFA) and University of Maine received grants to test and certify eastern hemlock and spruce for CLT (Local Species Cross-Laminated Timber Nearly Commercial in the Northeast - Northeastern Loggers Association). Bowdoin College's mass timber buildings were partly funded by a Mass Timber University Grant to cover the cost difference of using CLT. These grants reduce the risk and help build local expertise.
- **Northern Border Regional Commission:** Timber for Transit grant program provides funding "to advance the use of wood-based materials and composites (advanced wood materials) through applied research and demonstration projects that showcase the suitability of such materials to transportation and transportation adjacent infrastructure." (https://www.nbrc.gov/content/t4t)
- **State Economic Development Programs:** Maine's government created a **Maine Mass Timber Commercialization Center** (at UMaine) and has offered tax incentives (Pine Tree Zone benefits) for wood products companies. New York's Empire State Development has included mass timber manufacturing in its strategic industries and could offer sizable incentives (grants, low-cost power, etc.) if a company commits to a plant upstate. Vermont and New Hampshire have smaller programs, but Vermont's Working Lands Enterprise Initiative might help fund a prototype production line on a smaller scale.
- **Green Building Incentives:** On the demand side, cities like Boston have piloted zoning incentives for green construction. While not timber-specific, a low-carbon building (which mass timber qualifies as) might get expedited permitting or density bonuses in the future. If such incentives materialize, they could indirectly spur more mass timber use.
- **Federal Legislation:** The 2023 Farm Bill and potential federal infrastructure packages have considered support for mass timber. There is talk of federal funding to retrofit old federal buildings or build new federal facilities with timber as a climate initiative. If that happens, Northeast federal buildings (VA hospitals, campus buildings, etc.) could adopt timber, boosting demand.
- Additionally, the **Softwood Lumber Board** and WoodWorks have been funding fire testing and code advancement, effectively a behind-the-scenes policy effort that has already borne fruit in the 2021 code changes.

In summary, the policy landscape is trending positive. Maine and Massachusetts are enabling taller timber, and others will follow. Incentives are reducing barriers to entry. The key will be continued education of code officials and insurance underwriters to ensure mass timber projects are evaluated on facts (e.g. char rates, structural redundancy) rather than misconceptions. As one fire official put it, *"It's not going to burn like kindling – it behaves more like concrete in a fire, just charing slowly"* (CLT: The Great Wood Hope). Such understanding is growing, which bodes well for more predictable approvals and potentially lower insurance premiums over time (some insurers are now offering favorable terms if modern fire detection and suppression are used in

timber buildings (Mass Timber: Key Risks & Benefits for Property Owners | CBIZ) (Mass Timber: Key Risks & Benefits for Property Owners | CBIZ)).

State Spotlight – Code Adoption in NY, NH, VT, ME: (As discussed above, code adoption varies. Here is a concise recap of the four states mentioned, highlighting differences.)

- **Maine:** *Fully adopted 2021 IBC tall timber codes.* Maine allows mass timber up to 18 stories (Types IV-A/B/C) as of 2021 (Maine Code Update - Mass Timber - Code Red Consultants). This progressive stance makes Maine a regional leader and signals to developers that any size mass timber project can be pursued. Maine's early adoption was aided by the state's desire to foster timber industry jobs; it aligned code with opportunity. Implication: Developers in Maine have a clear prescriptive path for tall wood, and this regulatory certainty is attracting interest (e.g. a proposed timber hotel in Portland).

- **New Hampshire:** *Has not yet adopted tall timber code provisions.* NH as of 2025 is operating under 2018 IBC for building (no tall timber) (Pushback on adopting new building energy codes in NH highlights ...). A 10-story timber building in NH would require a variance and extensive negotiation with the state fire marshal. In practice, most projects will stick to <=6 stories timber, or use podium designs (timber over concrete podiums) to achieve height. Implication: Until NH updates its code (likely in the next cycle), mass timber will be somewhat limited here, possibly causing developers to look to neighboring states for taller projects. The risk for NH is falling behind and losing marquee projects to Maine or MA. On the flip side, NH is watching early adopters and can benefit from their lessons once it does update the code.

- **Vermont:** *Operating under 2015 code; no provision for tall timber yet.* VT limits wood structures to the legacy heights (generally 6 stories max for Type IV). Any deviation requires state permission. Vermont's construction volume is smaller, but there is interest (Burlington, Montpelier projects). The state's deliberate code cycle means tall timber likely won't be codified until perhaps 2026 or later. Implication: Developers in VT might be cautious to attempt anything beyond 6 stories until the code catches up. In the interim, demonstration projects (like a proposed timber affordable housing project in Burlington) may proceed via variance as case studies to inform code adoption.

- **New York:** *Mixed – awaiting state adoption, NYC partially updated.* New York State will likely adopt tall timber codes with the 2024 IBC update in a couple years (the Dept. of State is actively reviewing it) ([PDF] How Mass Timber Buildings Can Address Climate Change). New York City updated its code in 2022 to allow mass timber up to 7 stories (be-exchange.org), but not the full 18. So effectively, NY developers have a green light up to mid-rise, and the very first high-rise timber projects (>85 ft) will require additional approvals or an NYC Building Code revision. New York's political support is evident (the NYC Mayor's Office is backing mass timber studies (Funded Program Has Helped 28 States to Adopt Mass Timber Code Provisions | SLB September 2023 Newsletter -

Softwood Lumber Board) and NY State's climate plan references wood buildings), so it's a matter of timing. Implication: In NY, expect to see a rush of 6-7 story timber buildings in the next 2-3 years (since those are allowed now in NYC and will be statewide once 2024 code is adopted). Truly tall timber (say a 15-story in Manhattan) might take a bit longer until codes and perhaps insurance frameworks solidify. For now, developers might design 12-18 story buildings with the anticipation that by the time of permit, the code will allow it – a bit of a gamble that policy is catching up.

2.4 Infrastructure and Forestry Considerations for Expansion of Domestic Production

To expand domestic mass timber production in the Northeast, several infrastructure and forestry-related factors must be addressed. Building a robust supply chain is not just about the factory itself, but also the upstream and downstream infrastructure that feeds and utilizes that factory. Key considerations include:

- **Timber Harvest and Log Supply:** The Northeast has abundant timber, but ensuring a reliable log supply chain of the appropriate species and grade for mass timber is crucial. Unlike the Pacific Northwest or Southeast where large industrial timber farms and vertically integrated companies dominate, the Northeast's wood basket is fragmented – many small private landowners and many small logging contractors. A CLT plant consuming, say, 30–50 million board feet of lumber per year (~70,000–120,000 m³) would need coordinated sourcing. The region's forests can certainly provide this volume (especially given surplus growth now that several pulp mills have closed), but it will require forward contracts or cooperatives to gather sufficient volumes of the right species and sizes. Strategies might include agreements with timberland owners or establishing a raw material broker. State forestry agencies can assist by identifying areas with surplus growth – for instance, Maine's millions of acres of spruce-fir and hemlock that used to feed paper mills could now feed a CLT plant. Encouragingly, a new mass timber market could improve forest management by creating demand for underused species like hemlock (which is currently facing pest threats such as hemlock woolly adelgid). In summary, the wood is there, but **the supply chain needs organizing**. This might involve hiring procurement foresters and using digital marketplaces or co-ops to ensure year-round log flow to a mill.

- **Sawmill and Lumber Processing Capacity:** A CLT or glulam plant needs a steady supply of dimension lumber (lamstock) of specific grades. The Northeast has a number of sawmills that cut 2x lumber (2x6, 2x8, etc.) from spruce, fir, pine, and hemlock. Some of the larger mills in Maine (e.g., Pleasant River Lumber Co., Irving Forest Products, Stratton Lumber) produce SPF-S lumber in construction grades and could be key suppliers. To meet a CLT operation's needs, these mills may need to make some adjustments:

- **Drying:** CLT requires lumber dried to ~12% moisture content. Not all regional mills currently dry to that level (standard framing lumber might be 15–19% MC). **Increasing kiln capacity or optimizing drying schedules will be necessary.** This is an area for investment – either the CLT plant installs its own kilns to dry incoming lumber, or partner mills upgrade their kilns. Modern high-temperature kilns can be installed for a few million dollars and can boost output significantly. Some mills have anticipated this; for example, Pleasant River Lumber added kiln capacity in recent years, partly in anticipation of new markets. Access to low-cost biomass heat (from mill residues) also helps. Overall, drying is a solvable bottleneck with relatively modest capital investment.
- **Grading and Species Mix:** Northeast mills will need to produce lumber that meets the structural grades for CLT (typically #2 or better visually graded, and some MSR rated lumber for certain CLT layups). As noted previously, to compete with glulam from outside the region, a northeast glulam plant would need all MSR graded lamstock, of which there is very little currently. SPF-S is already graded and widely used in construction, so it largely meets requirements. Eastern hemlock has had grading challenges (it's brittle and knotty), but the hemlock CLT project developed grading protocols and even new grading rules for hemlock to be used structurally. As of 2023, lumber grading agencies like NeLMA have approved grading rules for Eastern hemlock that make it suitable lamstock, and *"multiple supply sources of eastern hemlock lamstock are now available"* for CLT manufacturing. In practice, a Northeast CLT plant might use a **species-mix approach**: mixing spruce-fir and hemlock (and possibly pine) in different lam layers to optimize performance and cost. For example, stronger black spruce lumber could be used in the outer layers for strength, with hemlock in inner layers. The infrastructure needed here is mainly testing and certification of such layup combinations – much of which is being done at UMaine and UMass. We can expect APA and ICC Evaluation Service reports in the near future to formally allow these species combos for commercial production. This is a critical development, as it gives a future plant flexibility to use whichever species is plentiful/cheaper each year (hemlock vs spruce, etc.).
- **Volume and Coordination:** As noted, Northeast sawmills are generally smaller than a Southern pine "mega-mill." A single mill might not meet all the lumber needs of a big CLT plant, so the plant will likely coordinate with multiple mills. This means setting up a supply chain akin to how pulp mills or pellet mills source from many small logging operations. An infrastructure solution could be forming a **wood supply cooperative or consortium**: several mills jointly invest in or commit to supplying the CLT facility. This ensures no single mill is overburdened and provides the CLT producer with redundancy (if one mill has an outage, others can pick up slack). One challenge of this approach is handling variability between mills, which may have to be addressed, at a cost, by the mass timber plant. Alternatively, a mass timber company could consider vertical integration – acquiring or building a sawmill dedicated to its supply – but that's a bigger lift

initially and would require additional capital. Most likely, partnerships with existing mills (perhaps secured by multi-year supply contracts) will be the approach.

- **Transportation and Logistics Infrastructure:** The physical infrastructure to move materials is generally a **strength in the Northeast**, but some enhancements could help a mass timber supply chain:

    - **Highways:** The region has an extensive highway network (Interstates I-95, I-90, I-87, I-91, etc.) connecting forested interiors of Maine, New Hampshire, upstate New York, and Pennsylvania to the urban centers (Boston, NYC, etc.). Trucking distances within the region are quite manageable: e.g., from northern Maine to Boston is ~250–300 miles, to NYC ~500 miles. This suggests that even if a CLT plant were at the northern tip of ME, it's only a day's truck drive to reach major projects. The highway network can handle the loads, though continued maintenance (bridges, pavement) for heavy trucks is important. Some local road improvements near potential mill sites (widening turns for 80-foot trucks, etc.) might be needed, but these are minor. States could assist by designating "mass timber corridors" with streamlined oversize permits, for example.
    - **Rail:** Rail infrastructure exists and can be leveraged. Maine, for instance, has rail lines (Pan Am Railways/CSX) connecting from mill towns to Massachusetts and beyond. The Millinocket site has an active rail spur. Rail could facilitate inbound shipments of logs or outbound shipments of finished panels, especially for longer distances (e.g., sending panels to NYC or Philadelphia by rail). A boxcar or flatcar can carry many more panels than a single truck. The **logistics advantage** of a rail spur at a CLT plant is significant – it provides flexibility and potentially lower cost for bulk transport. That said, rail transloading requires additional handling and scheduling, so it likely complements but doesn't replace trucking. The double handling approach does introduce more opportunities for damage, and moisture exposure that would require repair or replacement. In addition, double handling requires very thoughtful sequencing of loads to arrive at the end site in an optimized fashion. In an optimal scenario, a CLT plant uses rail to ship bulk orders to a regional distribution hub (e.g., panels to NJ by rail, then trucked locally), while using trucks for nearer deliveries. Investments in rail sidings, if not already present, would be worthwhile at any large mass timber plant.
    - **Ports:** Port infrastructure in Portland, ME, Boston, MA, and New York can be leveraged if needed. For example, if a Northeast plant wanted to **export** finished panels to Europe or other regions, or conversely to import specialized materials (like adhesives, specialty hardware, or even lamstock from Europe), the ports are available. Portland and Boston handle break-bulk and container cargo and could ship mass timber products overseas. While export is not a primary focus (the North American market itself has plenty of demand), it's good to have that option. In addition, imported components like European-made CNC machinery or polyurethane adhesives for CLT can come through these ports easily.

- **Trucking Regulations:** As mentioned under distribution (Section 1.3), oversize/overweight regulations are an infrastructure consideration. Some Northeastern states have stricter limits on truck weights and dimensions than Western states. Manufacturers will design panel sizes to comply (max ~10′ wide, ~40′ long to avoid escorts in most states). However, advocacy to harmonize oversize permit processes in the Northeast could reduce headaches. For instance, creating a multi-state permit for mass timber loads would help. States could also review whether certain routes could allow 12′ wide loads by exception, which might enable even larger panels occasionally. Another consideration is **seasonal road closures** (spring thaw weight limits on secondary roads in northern ME/NH). A CLT plant will need good all-season road access to avoid disruptions in mud season. Most candidate sites (former mill sites) do have robust roads designed for heavy pulp truck traffic, so this should be manageable.
- **Storage/Staging:** On-site at a future plant, having a large yard or warehouse to stage finished glulam (and possibly CLT panels) under cover is ideal. This allows the plant to keep producing year-round and stockpile when projects are delayed or trucks are unavailable. An old paper mill site often has this kind of space (e.g., 7-acre warehouse pads in Eastport or Searsport, ME, used for wood pellets). Such storage buffers the supply chain and provides flexibility in scheduling deliveries to job sites that may not be ready. It's an often overlooked but important infrastructure piece. In the field, as mass timber use grows, **temporary staging areas** near urban centers might be developed – essentially interim warehouses where a train or multi-truck shipment can be aggregated and then broken into just-in-time smaller deliveries to urban construction sites with limited laydown space.

In summary, the Northeast's infrastructure is generally favorable (good road and rail bones, available industrial sites), and bottlenecks like drying kilns and permitting processes can be addressed with targeted investments. The region's history in forest products means many of the pieces (forests, sawmills, transportation corridors) are in place – it's a matter of re-aligning them for mass timber instead of legacy uses.

2.5 Feasibility Analysis: Requirements for a Robust Regional Supply Chain

Bridging the gap from the current state to a fully realized Northeast mass timber supply chain will require strategic actions and collaboration across various stakeholders. Below is a feasibility roadmap – **key requirements and considerations** to build a robust regional CLT/glulam supply chain:

1. **Anchor Investment in Manufacturing:** The cornerstone is attracting or developing at least one CLT production facility (potentially combined with glulam or LVL production) in the Northeast. This likely means securing an anchor investment of on the order of ~$100 million to cover plant construction or retrofit, equipment (hydraulic press, CNC machining center, curing clamps, etc.), and startup costs. The planned Millinocket CLT project was a $30M investment for 100 jobs, and costs have risen substantially since

(Redevelopment of Millinocket mill has setback, as anchor tenant pulls out | Mainebiz.biz). Feasibility of such an investment will depend on demonstrating a strong business case:

- **Market Viability:** Investors will want to see a solid order backlog or commitments. This is where the pipeline of projects and possibly off-take agreements come in. For instance, if a few large developers or a state government commit to sourcing X% of their mass timber from a new local plant, that reduces market risk. Public-private partnerships could be used – e.g. a state or university system agreeing to use the product for upcoming buildings, or even taking an equity stake or providing loan guarantees. Massachusetts, for one, has considered legislation to require state-funded buildings to evaluate mass timber, which could create guaranteed demand. At this time, there are few individual projects or developers of significant enough volume to de-risk demand volatility. The collective demand, while harder to secure, is a more promising indicator.
- **Competitive Edge:** A Northeast plant must compete with established suppliers (some of whom have lower cost structures in the South or West due to cheaper logs or labor). However, a local plant would have distinct advantages to leverage: **lower shipping costs and times** to Northeast projects, the ability to offer just-in-time delivery, and the marketing appeal of “locally sourced” sustainable timber (which could help projects earn local buy-in and LEED credits). Emphasizing these points can justify a price premium if needed. Additionally, a local plant could specialize in certain product niches – for example, custom-sized panels optimized for typical New England beam spans, or hybrid CLT assemblies (panelized roof or wall systems) integrated with mechanical chases suited to Northeast energy codes. Another idea is integration with **modular construction**: a CLT plant could partner with modular builders to produce mass timber modules for hotels or apartments, carving a niche that out-of-region suppliers cannot easily fill. Serving the mid-Atlantic and Midwest in addition to New England can also expand its market reach (a plant in, say, New York could economically ship to Chicago or DC, being closer than West Coast competitors).
- **Cost Competitiveness & Scale:** The plant’s initial scale should match realistic demand. Feasibility might improve by **phasing the capacity**. For example, start with a smaller CLT line (perhaps ~50,000 m³/year capacity, which is roughly 21 million board feet or enough for a few million square feet of building per year) that requires less capital, prove the operation and build the market, then expand with additional presses later as demand grows. The Maine MMTCC study considered scenarios for small vs. large facilities and found both could be profitable under reasonable demand and price assumptions. Starting modestly lowers risk, and equipment suppliers (e.g. Ledinek, KLH, Kallesoe) offer modular production line components that can be added on. Financial feasibility also depends on feedstock cost – long-term contracts with sawmills at stable prices will be important to avoid lumber price volatility affecting margins.

2. **Supply Chain Coordination & Consortium Building:** As discussed in Section 2.4, aligning the supply chain from forest to factory is essential. One feasible approach is forming a **Mass Timber Consortium** in the Northeast:

    - This consortium would include landowners, logging contractors, sawmills, the mass timber manufacturer, and possibly large end-users (developers or construction firms). By working together, they can ensure raw material flows and fair pricing through the chain. For example, sawmills could be guaranteed a buyer for certain lumber specs (reducing their market risk), and the CLT plant gets guaranteed supply at agreed prices. As an example, Cambium Carbon is building the enabling technology to stitch together the materials supply chain.
    - The consortium could be facilitated by state agencies or industry groups (like the Northeast State Foresters Association or the Northeastern Lumber Manufacturers Association). It might operate similar to an agricultural co-op, sharing benefits and stabilizing the supply chain. In practice, it could mean regular roundtable meetings to coordinate production forecasts, investments in shared resources like kilns or trucking fleets, and collaborative problem-solving (e.g. if a bug infestation spikes hemlock harvest, how to utilize it in CLT).
    - Additionally, collaboration with academic institutions (UMaine, UNH, UMass, MIT) in the consortium can provide R&D support – for example, testing new species mixes, improving adhesive technology, or developing structural systems tailored to regional needs. This keeps the supply chain innovative and able to solve problems quickly (for instance, finding a use for off-grade lumber or optimizing panel designs for local code requirements).

3. **Workforce Development and Training:** The feasibility of a new supply chain improves greatly with a skilled workforce ready to go. Steps include:

    - Developing training programs for CLT production technicians, CNC machine operators, adhesive technicians, and timber construction assembly crews. This could be done through community colleges or trade schools in likely host states (Maine, New Hampshire, Vermont, New York). Given the relatively small number of employees needed for a plant (perhaps 30–50 to start), even a single specialized program or a partnership with an existing wood technology program (like UMaine's Wood Science program or Vermont Technical College's programs) can suffice. The goal is to avoid a skills gap that would otherwise require bringing in technicians from abroad.
    - Cross-training existing wood products workers for mass timber. The Northeast has people experienced in carpentry, furniture-making, millwork, etc. The learning curve for many mass timber production skills (operating planers, presses, CNC routers) is not steep for those with a manufacturing or woodworking background. Short courses or on-the-job apprenticeships can transition workers from declining industries (e.g. paper mills) to mass timber. For

example, former papermill electricians and mechanics are ideal candidates to run a modern CLT press line.

- At the construction end, ensuring general contractors and carpenters in the region are trained in erecting mass timber will make the product more user-friendly and likely to be specified again. WoodWorks and the carpenters' unions have already begun offering training sessions on mass timber assembly (rigging CLT panels, installing connections, etc.), and this should continue and expand. The easier contractors find it to build with timber, the more they will recommend it to owners.

4. **Market Development and Continuous Demand Generation:** Feasibility isn't just about initial demand to justify a plant, but sustained demand to keep it running at capacity for years. This means actively marketing mass timber's benefits and finding new use cases:

    - **Demonstration Projects:** Continue to pursue iconic demonstration buildings in different sectors – e.g. a mass timber school, an office building, an affordable housing project, a bridge – to showcase the material's versatility. Every successful project builds knowledge and confidence in the local industry. Public agencies can lead by example (as mentioned, federal/state projects using timber).
    - **Education & Outreach:** Architects, engineers, and developers need exposure to mass timber options. Expanding outreach (lectures, building tours, design competitions) in the Northeast will generate new projects. The WoodWorks Innovation Network is connecting local developers with experienced mass timber professionals, which helps seed projects. The goal would be to integrate mass timber education into AIA and ASCE continuing education so it becomes a standard part of design conversations in the region.
    - **Policy Support for Demand:** Encourage policies such as embodied carbon requirements in building codes or green procurement rules that favor low-carbon materials. If cities like Boston or New York implement carbon accounting for new construction (as some West Coast cities have), mass timber will often come out favorably, effectively nudging developers toward it. States could also provide incentives to building owners – for example, a density bonus or a faster permit process for projects that use mass timber and meet certain sustainability criteria.
    - **Diversified Product Offerings:** A Northeast mass timber enterprise might diversify to smooth out demand cycles. For instance, producing CLT **modular homes or panelized home kits** could tap the single-family market in addition to commercial projects. Or making CLT **industrial matting panels** (used for temporary work platforms) can provide baseline volume even when building construction is slow. Sterling Lumber in Illinois successfully uses their CLT line for both industrial mats and building panels (Cross-Laminated Timber (CLT) panels Fact Sheet | VCE Publications | Virginia Tech). This kind of dual market approach could be wise to buffer economic swings (mats demand often

correlates with infrastructure and energy sectors, which may not sync with real estate cycles).

- **Cost Reduction & Efficiency:** Over time, achieving cost competitiveness will secure demand. This involves continuous improvement: reducing waste (optimizing panel layouts to minimize cut-off scrap), improving logistics, and perhaps developing **standardized components** for common building types (like a "Northeast Mass Timber School" kit that lowers design cost for school districts). By bringing costs down, mass timber can compete head-to-head with steel/concrete on more projects without needing a sustainability premium.

5. **Strategic Infrastructure Investments (Opportunity Map):** Identify and strengthen the critical nodes in the supply chain that may be underdeveloped or could become bottlenecks, and target them for investment. Key opportunities include:

    - **Dry Kilns:** As noted, additional kiln drying capacity is needed to produce low-moisture lamstock. Given it's different moisture requirements from stud framing, this mass timber lamstock would be a separate chain. Investing in modern kiln facilities (either at sawmills or at the CLT plant) is a high priority to ensure consistent lumber quality. This is an investment opportunity for sawmill companies and could potentially be supported by grants or low-interest loans given its importance.
    - **Adhesives and Resins:** Mass timber production relies on structural adhesives (e.g. polyurethane or melamine adhesives for CLT). Ensuring a steady, local supply of these specialized resins is important (especially to avoid supply chain issues like what some U.S. plants faced in 2021 with global chemical shortages). An opportunity exists for chemical companies or distributors to set up regional storage or production of mass timber adhesives, which would support any new plant.
    - **CNC Machining and Fabrication Centers:** High-capacity CNC machines (for cutting panel openings, ducts, connection slots) are an integral part of the supply chain. A new CLT plant will have some CNC capability, but there is also an opportunity for independent fabrication shops to emerge – firms that take raw CLT or glulam and do custom fabrication for contractors. Investing in a regional **mass timber fabrication center** (perhaps an expansion of an existing precast concrete plant or steel fab plant to add timber capability, or upgrading technology at an existing timber frame shop) would add value and flexibility. Timberlab's Greenville, SC facility is one model, where they service projects separate from the manufacturing location. A Northeast analog could be very useful, especially if the CLT manufacturer can't handle all customization in-house. Bensonwood (NH) and South County Post and Beam (RI) are regional examples of where this model has been successful.
    - **Transportation Hubs:** While trucking is the main mode, having logistics hubs (as mentioned, perhaps rail transload facilities or consolidation warehouses near cities) could streamline deliveries. For instance, an **aggregation hub in New**

Jersey could receive bulk shipments from a future Maine plant and then handle final distribution to NYC/Philly/DC metro projects. Investment in such a hub – essentially a distribution center for mass timber – could reduce costs through economies of scale in transport.

- **Kiln Drying of Hardwood/Alt Species:** If in future the use of certain hardwoods (e.g. beech LVL like BauBuche, or yellow birch CLT panels for floor decking) becomes viable, the Northeast has ample hardwood forests. There's an opportunity to explore those materials (which could differentiate the market) – but it would require R&D and adapted infrastructure (hardwood lumber drying, different adhesives). Institutions like UMaine or UMass could partner on pilot lines for *hardwood CLT or hybrid panels*. This is a longer-term opportunity that could open up use of the full forest resource.
- **Quality Assurance and Certification Labs:** Having regional testing and certification facilities can speed up product development and iteration. Investment in such labs or partnerships with agencies (like NELMA's lab) will ensure the Northeast industry can self-certify and innovate without depending on distant labs. This reduces time to market for new products/species.

By addressing these strategic points, the Northeast can build a resilient supply chain less prone to disruption and more able to capitalize on its strengths (local timber, skilled labor, market demand).

6. **Two-Path Future State Comparison:** It's useful to consider two alternate futures for the Northeast's mass timber supply and assess their implications:

    - **Scenario A: Northeast timber continues to be processed into mass timber outside the region, with finished products imported for projects.** In this future, local forests feed mills elsewhere (e.g. logs or rough lumber are shipped to existing CLT plants in Canada, Midwest, or the South), and the Northeast remains a consumer, not a producer, of mass timber. Economically, this means the region exports low-value raw materials and imports high-value products – a missed opportunity for value-added manufacturing. The supply chain would remain as it is today: long transport distances, higher costs, and reliance on external suppliers. The operational feasibility of this scenario is actually straightforward (it's the status quo), but it carries risks: **supply chain reliability** (if distant plants are at capacity or prioritize closer markets, Northeast projects might face delays or higher prices) and lost economic multiplier effects regionally. In Scenario A, the Northeast also has less control over product availability (for example, if European demand surges and Austrian producers allocate less to U.S. export, local projects could be squeezed). In terms of development, Scenario A could slow adoption if supply remains perceived as a constraint. Essentially, the region would be at the end of a long supply chain – which is workable but not optimal. Over the longer term, this arrangement might continue

to validate northeast wood species as good candidates for mass timber production.

- **Scenario B: Full mass timber manufacturing develops within the Northeast, processing local timber into CLT/glulam within the region.** In this future, one or more plants are operating by, say, the late 2020s, and the Northeast becomes a net producer (possibly even exporter) of mass timber. Economically, this captures significantly more value in-region: logs -> lumber -> CLT panels all done locally, creating jobs at each step. Operationally, Scenario B shortens the supply chain dramatically – lead times for projects shrink, transportation costs drop, and the industry can be more responsive to local demand surges. It also encourages a cluster effect: related businesses (fastener suppliers, fireproofing solutions, design services) spring up around the manufacturing. Feasibility-wise, Scenario B requires that upfront capital and coordination we've outlined. It is harder to initiate than Scenario A, but once realized, it is self-reinforcing. Local developers get more comfortable with mass timber because there's a local knowledge base and support network. One can imagine Maine or upstate NY becoming a hub akin to how Austria's Styria region is for Europe – multiple timber companies feeding a vibrant market. Scenario B does come with some risks: the new plant must compete and remain efficient to survive (it would face competition from larger established plants in low-cost regions), and it needs steady demand to thrive. But Northeast demand is expected to be sufficient, and any excess capacity could be sold into other markets (mid-Atlantic, Great Lakes).

Side-by-Side Comparison:

Aspect	Scenario A: No Local Manufacturing	Scenario B: Robust Local Manufacturing
Economic Impact	Export raw logs/lumber; import finished panels. Limited regional job creation (mostly in logging/sawmilling). Money flows out to distant manufacturers.	Invest locally; create manufacturing jobs and skilled positions. Multiplier effect as wages and profits recirculate in local economy.
Supply Chain Length	Very long: local wood -> distant plant -> back to Northeast as product (often thousands of miles). More points of failure and higher transport emissions.	Short: local wood -> local plant -> local site. Lower transport costs, faster turnaround, lower carbon footprint for delivery.
Cost Volatility	Subject to external pricing. Shipping costs and tariffs add to volatility. Little control over sudden price hikes or supply crunches (e.g. if a big West Coast project ties up capacity).	More stable pricing possible. Local plant can offer fixed contracts to regional builders. Lower shipping costs; less exposure to fuel price swings. Still exposed to lumber price cycles, but can hedge with local supply agreements.

Aspect	Scenario A: No Local Manufacturing	Scenario B: Robust Local Manufacturing
Innovation & Customization	Must rely on external suppliers for any new product types or custom solutions; potential delays in R&D reaching Northeast.	Local industry can innovate products for Northeast needs (e.g. hurricane-resistant connections for coastal builds, or hybrid wood-concrete systems for local code). Easier collaboration between designers and manufacturer to customize solutions.
Developer Confidence	May be lower due to perceived supply risk or longer lead times. Some developers might avoid mass timber if they worry about sourcing from far away.	Likely higher because a local supply can be visited, consulted, and trusted. Just-in-time supply and local technical support improve builder confidence.
Environmental	More transportation emissions shipping materials in. Forests still managed for lumber, but no local incentive to use underutilized species (distant mills might not request NE hemlock).	Significantly reduced transport emissions per project. Greater utilization of the forest (local plant can take hemlock or pine that might not be in demand elsewhere, improving forest diversity management). Overall carbon footprint of construction is lower, boosting region's climate goals.
Resilience	Region is dependent on outside producers; if one goes offline or divert product elsewhere, Northeast construction could face delays. Less resilient in supply shocks (e.g. border closure, trade dispute).	Region has at least one domestic source; more resilient to national/international disruptions. The integrated local supply chain (forest-to-building) can keep running even if global supply has hiccups, as long as local logs are available.

In weighing these futures, **Scenario B (local manufacturing)** appears far more beneficial for the Northeast's long-term interests in terms of economics, control, and sustainability. Scenario A (status quo) is the path of least resistance in the short term, but it means foregoing substantial benefits and leaving the region's mass timber aspirations at the mercy of others. The analysis clearly leans toward pursuing Scenario B – and the roadmap in this section outlines how to make that happen.

While the conclusion to favor Scenario B in the above analysis is strongly held by many in the region, it should be recognized that the accompanying capital outlay is much more significant with this option. When considering the holistic cost comparison between Scenarios A and B, it is helpful and perhaps necessary to disaggregate the final price a regional customer would face into constituent parts:

- cost of input materials
- cost of manufacturing
- cost of transportation

Cost of Input Materials:

The existing supply chain for structurally-graded, kiln dried lumber in the northeast is present though likely lacking in certain areas. Notably, Eastern Hemlock has not commonly been structurally graded, and kiln drying can present challenges. Similarly, the requirements for MSR SPF-S may be relatively high when compared to the current output. As such, it is anticipated that the cost of input materials for a northeast based mass timber manufacturer would be higher than those for a manufacturer located in the southeast and procuring lumber from their local region. As more interest and demand for locally sourced mass timber develops, and as one or more manufacturers come to the region, these lumber supply chains will inevitably mature, bringing down costs as scale increases. At the time of this writing, cost premiums for locally sourced lumber are in the range of 15-30% when compared with lumber from other regions of the country being delivered to mass timber manufacturers local to them. Additionally, due to the lack of support infrastructure as mentioned above (CNC, kiln drying, etc.) the cost premiums associated with local lumber for local suppliers may be higher to start but will reduce as those components are further developed.

Cost of Manufacturing:

The main difference in cost of manufacturing locally vs. distant will lie in the upfront infrastructure and equipment costs. These costs are factored into the monetary payback of a new manufacturing facility and therefore should not result in a significant cost premium for the resulting mass timber products. Further, the more supportive the Northeast is to attracting and retaining a mass timber manufacturer through incentives, tax breaks and other financial benefits, the lower any such financial premiums should be.

Cost of Transportation:

This is the obvious main difference (and perhaps most pronounced in terms of real cost savings associated with a local supplier) between locally sourced mass timber and alternatives. Local supply means less transportation when compared to distant sources.

7. **Comparative Risk Assessment: Mass Timber vs. Traditional Systems for Housing Development:** Since a major application of mass timber is in housing (multi-family apartments, condos, etc.), it's important to compare the risks of mass timber construction with those of traditional building systems like stick-built wood, steel/concrete, or modular methods. Below is a comparison on key risk factors for developers:

    - **Construction Cost and Volatility:** *Mass timber* projects currently tend to have slightly higher structural material costs than traditional steel or concrete, but can save on labor and time. One risk is **lumber price volatility** – CLT panels are essentially a fabricated lumber product, so if sawn lumber prices spike (as happened in 2021), panel prices can spike too. However, *stick-built* housing is even more directly exposed to lumber price swings (being almost entirely 2x

lumber). Steel and concrete have their own volatility (steel prices can jump with tariffs, concrete with cement shortages). The difference is that CLT is a newer, less commoditized product – fewer suppliers means less competitive pricing, which could mean more volatility or price rigidity until the market grows. Over time, as more manufacturers come online (including hopefully in the NE), this risk should diminish. On the flip side, mass timber can potentially **reduce construction time by 20–25%**, which mitigates financing risk (shorter loan durations) and can offset some cost risk (Mass Timber: Key Risks & Benefits for Property Owners | CBIZ) (Mass Timber: Key Risks & Benefits for Property Owners | CBIZ). *Modular construction* (often stick-framed modules) similarly reduces on-site time, but it carries the risk of relying on a single factory – if that factory has delays or goes bankrupt (as some modular startups have), the project stalls. Mass timber doesn't necessitate full volumetric modular; it can be panelized, which is a simpler supply chain. So in terms of cost volatility: **all wood-based systems have lumber price risk**, but mass timber's faster build can hedge against some market inflation by beating schedule.

- **Fire Safety and Code Acceptance:** This is often the top concern. **Mass Timber** is heavy timber – it chars on the outside in a fire, forming an insulating layer that protects the core. Extensive tests have shown well-designed CLT or glulam can achieve 2-3 hour fire ratings and maintain structural integrity (CLT: The Great Wood Hope). Building codes now recognize this. The *perceived* risk, however, is that wood burns. Some insurers and officials still view a timber building as a higher fire risk than a concrete or steel one. While heavy timber doesn't "flash burn" like light stick framing (which can rapidly collapse if unprotected), it is still combustible, unlike concrete/steel. So the risk for developers is mostly in **insurance and approval**: they may face higher insurance premiums or more scrutiny from fire officials when using mass timber. Many are mitigating this by adding extra safety measures – e.g. installing comprehensive sprinklers (which is required anyway for multi-family), using fire-resistant coatings on exposed wood, and during construction, implementing strict fire plans (since an unfinished timber building is more vulnerable before sprinklers are active) (Insuring mass timber - Kennedys Law). *Stick-built* (light-frame) multi-family construction has a known risk profile: it's permitted up to 5-6 stories in most codes, but there have been high-profile fires in wood-frame apartment complexes under construction, which has led some cities to tighten rules (e.g. requiring more on-site fire watch). Mass timber, being sturdier, might actually perform better than stick framing in a fire once finished; however, *steel* construction, while non-combustible, can suffer quick failure in high heat unless coated with fireproofing. It's notable that building codes treat heavy timber (Type IV) similarly to non-combustible construction in many cases for fire resistance because of its proven performance (CLT: The Great Wood Hope). So the actual fire *safety* risk may not be higher for mass timber, but the **code acceptance risk** is a factor in that not all jurisdictions have updated codes, and not all officials are equally experienced with it. This risk is gradually decreasing as adoption spreads.

- **Water and Moisture Risks:** A less often discussed risk: *Mass timber* can be sensitive to moisture during construction. If panels are not protected, heavy rain can saturate them, potentially causing construction delays (to dry out) or even damage (swelling, mold risk). Developers need to ensure contractors have a weather protection plan (tarps, tenting, or sequencing to rapidly get the building dried-in). Stick-built projects also face rain, but replacing a few warped studs is easier than a giant CLT panel. Completed mass timber buildings must also be protected from leaks – while that's true of any building, prolonged moisture can degrade wood. Insurers actually cite **water damage during construction** as an equal or greater concern than fire for mass timber projects (Mitigating the risks around mass timber construction | Lockton) (Mass Timber: Key Risks & Benefits for Property Owners | CBIZ). Mitigation involves using sealants, monitoring moisture (some install sensors in the wood), and ensuring design details keep water away (good roofing, overhangs, etc.). *Concrete* construction doesn't have rot issues but can trap moisture and cause interior mold; *steel* can corrode if persistently wet. So each system has some moisture consideration, but mass timber likely requires a bit more diligence in early phases. Once occupied, a mass timber building performs fine in normal humidity ranges, but if there's a major leak or flood, repairs might be more complex (replacing a CLT floor panel is a bigger job than replacing drywall).
- **Supply Chain Reliability:** *Mass timber's* supply chain is still maturing. In 2020-2022, North America saw a few disruptions – e.g. the bankruptcy of Katerra took a large CLT plant offline suddenly, and another major CLT supplier had to pause a new plant. With only a dozen or so suppliers, if one has an issue, projects may be impacted. A developer building with mass timber might need to order materials far in advance to ensure slot time at a manufacturer. This is a risk compared to *traditional stick-built*, where materials (2x4s, plywood, nails, etc.) are commodities available from countless suppliers on short notice. If a project needs more wood framing, any lumber yard can deliver. If a project needs extra CLT panels unexpectedly, only a few factories can make them, potentially with lead time. That said, this reliability risk will diminish as more producers (including the prospective Northeast one) come online. Already, companies like SmartLam, Mercer, and others have expanded capacity, and new entrants (like Timberlab's planned Oregon plant (Cross-Laminated Timber (CLT) and Glulam Supply Chain in the Northeastern U.pdf)) are joining. *Modular construction* similarly has concentrated supply risk – many regions have just 1-2 factories building modules, so a delay at the factory can halt multiple projects. In that sense, mass timber panel supply risk is analogous to modular supply risk, whereas conventional framing is more buffered by broad supply.
- **Labor and Skills:** *Mass timber* construction requires different skills and tools than stick-built. Crane operators, riggers, and installers who know how to handle large panels are needed. This could be a risk if local labor is unfamiliar – it might cause schedule slips or quality issues initially. However, many union carpenters in the Northeast have been getting training for mass timber, and contractors often

bring in a specialty crew for the first few projects. *Stick-built* is very familiar to the workforce but ironically is facing labor shortages (not enough skilled carpenters in some areas). Mass timber's advantage is it uses a smaller crew overall (since so much is prefabricated), partially mitigating the labor shortage risk. *Steel and concrete* construction labor is well-established; mass timber crews can borrow from both trades (ironworkers, for example, are sometimes employed to erect heavy timber). Overall, labor risk is manageable but real – a learning curve for any new system.

- **Regulatory/Insurance Risk:** Summarizing some points above, the *permitting and insurance* process for mass timber can be more involved right now. Developers might face extra steps getting building department approval if the authority hasn't seen a mass timber project before. This can be mitigated by proactive engagement and using experienced design professionals. Insurance, as mentioned, sometimes comes with a premium (some insurers have been quoted as saying they view mass timber as higher risk until more data, which can mean higher builder's risk premiums or requirements for enhanced sprinkler systems) (Insuring mass timber - Kennedys Law). Traditional wood-frame (Type V) construction has well-known insurance costs (which can be high for large complexes, but at least predictable). Steel/concrete usually get the lowest insurance rates (non-combustible). As data accumulates showing mass timber's performance, insurance costs are expected to come down – some projects have already seen only marginal differences by demonstrating safety measures (Mass Timber: Key Risks & Benefits for Property Owners | CBIZ).
- **Seismic/Wind Performance:** In the Northeast, seismic risk is low, but wind (hurricanes in coastal areas) is a factor. *Mass timber* buildings can be engineered for high wind; they are lighter than concrete, which reduces base shear, and connections can be designed to resist uplift. There is ongoing research into wind resilience of CLT diaphragms and shear walls. *Stick-built* mid-rises often need steel bracing or plywood shear walls for wind; mass timber can use CLT shear walls which are very robust. So structural performance risk under extreme events is not a disadvantage for mass timber – in fact, in seismic regions like CA, CLT shear walls perform well due to ductility and lighter weight (less force). For the Northeast's hurricanes, proper nailing/connection design in timber should manage it. *Modular* units need strong connections between boxes to act together in wind/seismic, which is another risk area if not done right. Mass timber is monolithic by comparison.

Bottom Line: For housing developers, **mass timber presents some new risks (code navigation, sourcing, insurance) but also mitigates others (schedule certainty, potentially less on-site accidents, etc.)**. Traditional stick-built is well understood but has its own challenges (volatile lumber prices and labor shortages have made site-built wood less predictable lately). Modular can speed housing delivery but concentrates risk in the manufacturing pipeline. Steel/concrete are reliable in terms of code acceptance

and insurance but come with high carbon costs and often longer build times (and concrete can have price/spread risks, as seen with cement shortages).

Many developers are finding that with the right team, the risks of mass timber are manageable and are outweighed by benefits like speed, sustainability branding, and tenant appeal. For example, Hines (a global developer) has constructed multiple timber buildings and reports them as successful investments, and local developers in New England are following suit on smaller scales, often citing the *"wow factor"* that helps lease apartments or offices faster. Over the next few years, as the Northeast supply chain matures and codes fully adopt the new provisions, the comparative risks will continue to diminish, making mass timber an increasingly mainstream choice for housing projects alongside traditional methods.

Conclusion

The Northeastern U.S. stands at a pivotal moment to capitalize on its forest resources and growing demand for sustainable buildings by developing a homegrown mass timber supply chain. Currently, **mass timber construction in the region is gaining momentum** – dozens of new projects are in design – but the supply chain to support it is largely imported. This report has examined the status quo and future possibilities in detail. Key findings include:

- The region has **ample raw materials (spruce, fir, hemlock, pine)** that have been proven suitable for CLT and glulam, and utilizing these species could add value to the forestry sector while improving forest health by creating markets for underused timber).
- As of 2025, **no CLT manufacturing exists in the Northeast**, and only one significant glulam producer (Unalam) serves the region. This absence means long-distance import logistics, higher costs, and economic opportunity lost. However, plans are on the table for establishing facilities in Maine and possibly elsewhere, and **state support and private interest are coalescing** to make at least one plant a reality in the coming years (Domestic Mass-Timber Industry Expands with Two New Planned CLT Facilities for Maine | Article | EESI) (Redevelopment of Millinocket mill has setback, as anchor tenant pulls out | Mainebiz.biz).
- The **transportation analysis** shows that while the Northeast can be served from outside, a local supply would greatly reduce haul distances, trucking requirements, and associated bottlenecks (like oversize load restrictions). Rail and port infrastructure can supplement trucking for efficient distribution. Inbound logistics (logs to mills) will require coordinating a fragmented forest sector, but mechanisms like cooperatives or supply agreements can ensure a steady flow to any future plant .
- A review of **suppliers across North America and Europe** indicates that the Northeast is one of the last major wood-producing regions without its own mass timber production. Successful models in the Pacific Northwest, Southeastern U.S., Quebec, and Austria demonstrate that a cluster of manufacturing, supported by local species, can thrive (CLT: The Great Wood Hope). The species table provided shows that leading

manufacturers use species very similar to those in the Northeast, reinforcing that material compatibility is not a barrier (Nordic X-Lam).

While the Northeast has meaningful long-term opportunity to develop a regional mass timber supply chain, the findings of this report indicate that significant barriers currently prevent the region from competing with established producing regions. Higher raw material costs, limited MSR and kiln-drying capacity, fragmented log procurement networks, and the absence of strong state-level incentives place the Northeast at a structural disadvantage. These challenges must be addressed before local CLT or glulam manufacturing becomes economically viable. With targeted investment, coordinated supply chain development, and supportive public policy, the region could unlock this opportunity over time—but realizing that vision will require substantial effort and intervention, not simply market momentum.

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