BACKGROUND PAPER | DRL v3.1 Supporting Document

The Reagan Forestry Legacy

& The American Housing Crisis

How a 1981 tax act planted the trees, built the asset class, wrote the building codes, and how the federal innovation apparatus assembled around the affordable housing crisis appears to advantage one material category over its competitors.

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Executive Summary

This paper documents the causal chain connecting Reagan-era fiscal and forestry policy to the convergence, four decades later, of a mature institutional timberland asset class, a subsidized mass timber construction mandate, and the American affordable housing crisis as political permission structure.

It adds a dimension absent from most analyses of this system: the federal funding asymmetry between construction-market development for one material category and process decarbonization research for the others. The timber apparatus has not merely written building codes and welcomed the EPA's 2018 biogenic-neutrality policy statement. It has built — through USDA Forest Service partnership with the Softwood Lumber Board and its program family (WoodWorks, Think Wood, AWC, SLB Education) — the only construction-market-development apparatus in the federal innovation portfolio dedicated to a single building material. Steel, concrete, and aluminum receive process-decarbonization research funding through DOE programs (the Industrial Demonstrations Program, Industrial Efficiency and Decarbonization FOA, ARPA-E ROSIE program); none of these funds an equivalent specifier-facing market-conversion infrastructure for any non-wood material, and no SteelWorks-, ConcreteWorks-, or AluminumWorks-equivalent program was identified in this review.

> *An estimated $190–$220 million in combined federal and industry co-investment, 2015–2026, supports one material category's construction-market development, building-code engagement, and specifier education. In the materials reviewed, no comparable program was identified for steel, concrete, or aluminum. The resulting structure appears to create a persistent advantage for wood that is structural rather than incidental.*

The harvest cycle of loblolly pine plantations established under Reagan-era tax policy aligns with the statutory deadlines in the current policy apparatus. The federal funding structure described here may make it difficult for competing materials to reach deployment scale before that alignment closes.

1. The Legislative Foundation: 1978–1982

1.1 ERISA 1978 — Unlocking Pension Capital

The Employee Retirement Income Security Act amendments of 1978 established the prudent-investor standard for pension fund managers and the diversification framework within which institutional investment in alternative assets, including timberland, became materially more feasible at scale. Timberland had previously been held primarily as vertically-integrated raw material inventory by paper and pulp corporations; the post-ERISA period saw the formation of the first Timber Investment Management Organizations (TIMOs), which began deploying institutional capital into plantation ownership.

1.2 Reagan's Economic Recovery Tax Act of 1981

The ERTA reduced the top capital gains rate from 28% to 20%, transforming the after-tax return profile of long-duration biological assets. Timberland — which produces return through biological growth (appreciation) rather than income — had been structurally disadvantaged under high capital gains regimes. The 1981 act changed the calculus. Accelerated depreciation schedules under ERTA also encouraged plantation establishment investment.

The combined effect of ERISA and ERTA: institutional investor class created; investment made financially compelling; plantation expansion wave launched in the late 1980s and through the 1990s.

1.3 Reagan HUD Demolition — FY1982

Reagan's first budget (FY1982) halved HUD funding for public housing and Section 8 to approximately $17.5 billion. The Section 8 new construction and substantial rehabilitation programs — which had produced hundreds of thousands of affordable units annually through the late 1970s — were terminated in 1981 (NLIHC, “Changing Priorities,” 2002). HUD subsidized housing budget authority subsequently fell from approximately $32 billion (1981) to approximately $7 billion (1989), a decline of roughly 78% over the decade (Cato Institute Policy Analysis No. 127). The Low Income Housing Tax Credit was not created until 1986 and never matched the eliminated production capacity.

This paper presents these 1981 changes as a major contributor to the long-run housing deficit. The same administration whose tax policy improved the economics of long-duration timber assets also reshaped the federal housing-production apparatus described above. The 7.3-million-unit gap currently cited in mass timber policy advocacy is consistent with the long-run effects of those policy changes, although the gap has many contributing causes.

1.4 REIT Simplification Act 1997 — Completing the Financial Structure

The 1997 REIT Modernization Act formalized timber REIT tax treatment. Weyerhaeuser, Rayonier, and PotlatchDeltic completed their conversions through the early 2000s. By 2015, TIMO-managed assets exceeded $40 billion representing over 40 million acres. The trees planted in the 1988–1997 wave were approaching optimal harvest age.

2. The Biological Clock

Loblolly pine (Pinus taeda), the dominant commercial plantation species of the US South, reaches economic maturity at 25 to 33 years from planting. Trees planted between 1988 and 1997 entered their optimal harvest window between 2013 and 2030.

> *The LIMBER Act tax credits, as introduced, would expire December 31, 2030. The optimal harvest window for the late-1980s and 1990s loblolly plantation wave closes around 2025–2030. The two dates closely align. The alignment is observable in the public record; whether it influenced the bill's expiration timing is a question this paper raises rather than answers.*

A plantation left past peak harvest age does not gain value proportionally. The window for maximum return-on-planting-investment has a biological close date. For the Reagan-era plantation wave, that date is the late 2020s. Every layer of the policy apparatus is structured to create demand before that window closes.

3. The Alignment Timeline: Biological, Financial, and Policy

The following timeline documents the convergence of biological harvest cycles, financial asset class development, and policy instrument construction across four decades.

Period	Biological	Financial	Policy / Regulatory
1978–1982	Pre-plantation. Old-growth dominates.	ERISA (1978) opens timberland to pension capital. First TIMOs form.	Reagan ERTA (1981) — cap gains cut to 20%. HUD public housing/Section 8 funding halved to ~$17.5B (FY1982); Section 8 new construction terminated.
1985–1997	Peak plantation establishment. Loblolly mass planting, US South.	TIMO AUM grows $1B → $10B+. Paper companies divest timberland.	REIT Act (1997) — timber REITs tax-exempt. ISO 14040 LCA with biogenic carbon convention drafted.
1997–2010	Trees age 7–22. Below harvest maturity. Carbon sequestration phase.	Weyerhaeuser, Rayonier, PotlatchDeltic complete REIT conversions.	IBC excludes tall wood. EPA biomass accounting debate begins.
2010–2015	Trees age 22–30. Approaching harvest window.	TIMO AUM approaches $40B+.	USDA Wood Innovations Program launches (2014). WoodWorks expands.
2015–2019	Trees age 25–33. Harvest window opens.	TIMO/REIT combined market exceeds $90B.	EPA biomass declared carbon neutral by policy — not science (Pruitt, 2018). $93M+ USDA grants to 2019. ICC approves IBC mass timber provisions.
2020–2023	Prime harvest age. Extraction scales.	Timber REIT market cap $30B+. SLB/USDA $100M joint investment.	2021 IBC mass timber provisions adopted. 39 states adopt. LIMBER Act introduced.
2024–2026	Peak harvest. Consolidation pressure.	Rayonier/PotlatchDeltic merger announced (Oct 14, 2025; closes Q1–Q2 2026): 4.2M acres, 1.2 BBF lumber capacity.	$95M USDA Wood Innovations (FY2026 round, citing EO 14225). Trump EO 14225 (Mar 2025) + USDA ESD ~113M acres (May 2025).
2027–2030	Harvest window closing. Post-peak biological decline.	Harvest revenue maximization window closes biologically.	LIMBER Act tax credits expire December 31, 2030. Biological and policy deadline synchronized.

4. The Federal Funding Asymmetry: Wood vs. Every Other Material

This section directly answers the question: Is there an equivalent federal apparatus — dedicated grant program, industry-government partnership, building code advocacy, calculator tool distribution, specifier continuing education mandate — for steel, concrete, or aluminum in building construction?

> **BASED ON THIS REVIEW, THE ANSWER APPEARS TO BE NO. In the federal innovation portfolio reviewed for this paper, no comparable specifier-facing market-development apparatus was identified for steel, concrete, or aluminum construction. The asymmetry described below is qualitative as well as quantitative.**

4.1 Wood / Mass Timber — The Dedicated Federal Apparatus: Documented Numbers

The federal investment in wood products as a building material flows through a single coordinated apparatus with compounding layers:

Instrument	Agency / Partner	Documented Amount	Function
Wood Innovations Grant Program — cumulative 2015–2025	USDA Forest Service	$93M+ to 381 recipients	Market development, mass timber conversion, code advocacy
Wood Innovations Grant Program — FY2026 round	USDA Forest Service	Up to $95M announced Feb 2026	Expand wood-based construction, wood energy markets
2024 round alone — direct federal	USDA Forest Service	$31.3M (117 projects)	100 wood products markets; 36 specifically mass timber
2024 round — matched private funds	SLB / industry co-investment	$68M matched	Leveraged against federal grants through same apparatus
SLB / USDA joint initiatives (2015–present)	Softwood Lumber Board + USDA FS	~$100M combined	WoodWorks, ThinkWood, AWC co-funded market development
WoodWorks Carbon Calculator distribution	USDA-endorsed / industry tool	$0 cost to recipient (subsidized)	Free LCA tool to architects — biogenic carbon treatment per WoodWorks methodology (default usage subject to verification from tool documentation)
IBC mass timber provisions lobbying / drafting	AF&PA, SLB, AWC + USDA research	Non-cash: embedded in code	Three new construction types; widespread state and jurisdiction adoption (AWC tracker)

Instrument	Agency / Partner	Documented Amount	Function
LIMBER Act tax credits	US Treasury / Congress	Multi-year tax expenditure	Mass timber construction credits; expire Dec 31, 2030

RUNNING TOTAL — WOOD / MASS TIMBER, 2015–2026: an estimated $190–$220 million in combined federal and SLB co-investment, dedicated to one material category's construction-market development, building-code influence, and specifier education. This is an aggregation by the author from the components in the table above: federal Wood Innovations grant funding (~$93M cumulative through January 2023 per USDA, plus ~$74M federal in the May 2024 round, plus up to $95M announced February 2026); SLB / USDA-partnered co-investment in WoodWorks, Think Wood, AWC, and Education programs (~$100M combined since 2015, per SLB program documentation); and adjustment for overlap between federal-grant matches and SLB program funding. The figure does not include the LIMBER Act tax expenditure, which is additional and not yet enacted at this writing.

4.2 Steel — Process Decarbonization, Not Building Market Development

Federal investment in steel is real but structurally different in every way that matters for this analysis.

Program	Agency	Amount	What It Funds
Zero-process-emission ironmaking R&D	DOE	$28M (13 projects)	Manufacturing process decarbonization — not building market development
Industry decarbonization RD&D (iron & steel)	DOE	$83M funding opportunity	Alternative ironmaking, low-carbon steelmaking — not construction advocacy
IRA clean construction EPD grants	GSA / DOE	~$160M (all materials)	Environmental Product Declarations — disclosure infrastructure, not market development
Structural steel reuse documentation	GSA/IRA subset	Fraction of $160M	Documenting carbon savings from reusing steel — not new construction advocacy
Federal 'SteelWorks' program (equivalent to WoodWorks)	None	$0	Does not exist
Federal 'Steel Innovations' grant program (equivalent to Wood Innovations)	None	$0	Does not exist
Federal specifier	None	$0	Does not exist

Program	Agency	Amount	What It Funds
education for steel in residential construction			

The critical distinction: steel federal funding goes to manufacturing process decarbonization — reducing emissions in how steel is made. Not to market development. Not to building code influence. Not to specifier training. Not to building-type advocacy. There is no agency whose mission is to expand steel's market share in residential and commercial construction.

> *No federally-backed "SteelWorks" calculator distributed free to architects was identified in this review. No industry-government body co-funding continuing-education webinars for structural engineers on, for example, "Steel: Maximising the Sustainable Benefits" was identified. The WoodWorks model — USDA-partnered, SLB-funded, specifier-facing market conversion — has no equivalent in the federal portfolio for steel construction.*

4.3 Concrete — The Largest Construction Material, Zero Dedicated Innovation Subsidy

Concrete is the most-used construction material on Earth. It has no dedicated federal building innovation grant apparatus equivalent to Wood Innovations. Federal concrete funding is:

Program	Agency	Amount	What It Actually Funds
Concrete decarbonization / low-carbon cement R&D	DOE / ARPA-E	~$30–50M scattered	Manufacturing process emissions — fly ash, supplementary cementitious materials
IRA EPD grants for concrete	GSA	Subset of $160M all-materials	Emissions disclosure documentation only
Federal 'Concrete Innovations' program	None	$0	Does not exist
Federal building code advocacy for concrete construction types	None	$0	Does not exist
Free LCA calculator for concrete specifiers	None	$0	Does not exist — no WoodWorks equivalent

Concrete industry innovation is privately funded by Portland Cement Association, NRMCA, and similar industry bodies — with no co-investment from a dedicated federal grant program, no building code advocacy apparatus backed by federal research money, and no specifier education platform backed by government validation.

4.4 Aluminum — The Most Absent Material in Federal Construction Innovation

Aluminum has no dedicated federal construction innovation program of any kind. Federal aluminum investment is:

Program	Agency	Amount	What It Funds
Aluminum manufacturing decarbonization	DOE	Scattered, < $20M construction-relevant	Primary smelting energy reduction — not building applications
Critical minerals / bauxite supply chain	DOD / DOE	Defense-focused	Supply security for aerospace/defense — not residential construction
Federal 'Aluminum Innovations' program	None	$0	Does not exist
Federal building code advocacy for aluminum construction types	None	$0	Does not exist
Modular/industrialized construction innovation program	None	$0	Does not exist at material-specific level
HUD innovation program for non-timber materials	HUD	Token — < $2M	Not material-specific; generally unfunded under current administration

The Anyplace Modular System — which uses low-carbon aluminum framing, achieves 98% material recovery, and targets 99% zero-waste production — has no federal grant program to apply to that is structurally equivalent to Wood Innovations. The program that would fund it does not exist.

> *A patented industrialized housing system using permanent material reserves, as described by the author, may be disadvantaged under the current federal funding structure, which on the basis of this review has materially benefited the timber industry through a dedicated specifier-facing apparatus that has no comparable counterpart for other structural materials.*

4.5 The Comparative Summary — Side by Side

Dimension	Wood / Mass Timber	Steel	Concrete	Aluminum
Dedicated federal grant program	YES — Wood Innovations, $93M+ cumulative + $95M 2026	NO — process R&D only	NO — process R&D only	NO

Dimension	Wood / Mass Timber	Steel	Concrete	Aluminum
Industry co-investment with federal funds	YES — SLB + USDA ~$100M joint	NO	NO	NO
Free specifier tool (calc/software)	YES — WoodWorks Carbon Calculator, USDA-endorsed	NO	NO	NO
Federal continuing ed for architects/engineers	YES — WoodWorks CE credits, USDA-funded	NO	NO	NO
Building code amendment advocacy backed by federal research	YES — USDA research → IBC Type IV-A/B/C	NO	NO	NO
Tax credit for building with this material	YES — LIMBER Act, expires 2030	NO	NO	NO
EPA carbon neutrality declaration	YES — Pruitt memo, April 2018	N/A	N/A	N/A
Emergency federal harvest facilitation	YES — EO 14225 (Mar 2025) + USDA ESD ~113M acres	N/A	N/A	N/A
Combined federal + co-investment total (2015–2026)	~$190–220M + LIMBER tax expenditure	~$28–83M (process only)	< $50M (process only)	< $20M (defense-focused)

The asymmetry is substantial: an estimated order-of-magnitude advantage in construction-specific market-development funding for wood relative to comparable funding identified for any other structural material in this review. The federal innovation portfolio for residential and commercial construction-market development, on the basis of this review, appears to function in practice as a single-material program.

4.6 How the Asymmetry Operates as a System

The funding structure described above appears to do more than advantage timber financially. The components below appear to interact in ways that reinforce each other and that competing materials, on the basis of this review, do not appear positioned to access on comparable terms:

- USDA grants fund WoodWorks → WoodWorks trains architects and engineers → trained specifiers write wood into project specifications → project specifications create demand signal → demand signal justifies next round of USDA grants.

- USDA grants fund university mass timber research → research produces peer-reviewed papers → papers enter LCA literature → LCA literature informs AI training data → AI systems recommend mass timber → AI recommendations justify next round of university grants.
- USDA grants fund IBC advocacy → IBC adopts mass timber construction types → 39 states adopt IBC → state building codes require no equivalent for aluminum or steel modular systems → code gap makes competing systems harder to permit → harder permitting reduces adoption → reduced adoption reduces political will to fund competing systems.
- LIMBER Act credits expire 2030 → creates urgency deadline for mass timber projects → urgency deadline creates project pipeline → project pipeline justifies supply chain investment → supply chain investment justifies further policy protection of the pipeline.

Each loop appears to reinforce the others. None requires coordination. Each component is documented in the public record. Taken together, these relationships suggest a reinforcing policy loop in which competing materials, on the basis of this review, do not appear served by comparable funding infrastructure for advocacy in the affordable-housing solution space.

5. The Terminology Sequence: How the Statutory Category Expanded Over Time

The funding structure described above required a linguistic infrastructure to operate. A grant program funding 'CLT construction' in 2015 could not plausibly claim to solve the affordable housing crisis. A tax credit for 'engineered wood products' could not pass the Senate as climate policy. A building code rewrite for 'cross-laminated timber' could not be presented as innovation in sustainable construction. The product was given new names, in a documented sequence, each name adopted into a new layer of government policy before the previous name was retired.

> *The term “mass timber” is not central to the original ISO LCA standards. It enters the 2021 IBC through code-development proposals advocated by the American Wood Council and the Softwood Lumber Board, with USDA Forest Service research support, and is subsequently adopted as the operative term across USDA grant language, DoD procurement, GSA procurement, and federal tax-code references. The biogenic-carbon-accounting convention predates the terminology shift; the terminology change appears to have helped normalise an existing accounting approach in policy.*

5.1 The Four-Move Nomenclature Sequence

The terminology shift is not organic industry evolution. It is a documented, publicly-funded market development strategy with a traceable institutional origin. Each term change corresponds to a new policy instrument and a new government funding channel:

Term in Use	Period	Policy Instrument Unlocked	Government Body That Adopted It
Engineered Wood Products	Pre-2014	General lumber market; no specific policy apparatus	USDA Forest Service — general timber programs
Cross-Laminated Timber (CLT)	2014–2018	USDA Wood Innovations Grant Program — first rounds explicitly fund CLT research and demonstration	USDA FS; initial IBC fire/structural research
Mass Timber	2019–present	2021 IBC Types IV-A, IV-B, IV-C — 'mass timber' becomes the legal category; 39 states adopt. Replaces 'CLT' as the governing regulatory term.	IBC/ICC; AF&PA; SLB; AWC; USDA FS
Innovative Wood Products	2023–present	S.1094 (Fix Our Forests Act) — federal procurement preferences for “innovative wood products.” H.R. 7245 (LIMBER Timber Act of 2026) uses “mass timber” as	US Senate/House; DoD (S.1094); GSA procurement

Term in Use	Period	Policy Instrument Unlocked	Government Body That Adopted It
		its statutory term and creates the Mass Timber Plant Investment Credit, the Mass Timber Workforce Development Credit, and the Mass Timber Construction Credit ($5/sq ft) — all expiring December 31, 2030.	
Mass Timber Construction Credit	2025–2026	LIMBER Timber Act: $5/sq ft credit — 'mass timber' is now a defined term in the US tax code. Expires Dec 31, 2030.	US Tax Code (H.R. 7245)

5.2 What Each Term Shift Did at the Policy Level

- 'CLT' is a product specification — auditable, testable, comparable. Granting it carbon neutrality requires accepting the biogenic convention. The EPA's own document says that convention is not scientific.
- “Mass timber” is a broader category than CLT, encompassing glulam, LVL, NLT, DLT, and other engineered wood products that meet the IBC's definition. The shift from “CLT” to “mass timber” in the 2021 IBC may have expanded the category beyond CLT alone, with implications for the construction type, the grant program, and the proposed tax credit. The category boundary, in practice, is shaped by the IBC committee process in which industry organisations are active participants.
- “Innovative wood products” is the umbrella legislative-and-program term used in S.1094 (Fix Our Forests Act) procurement language and across USDA Wood Innovations grant program literature, and it appears prominently in CRS Report R47752. The term is not defined in those documents with precision sufficient to exclude any timber-derived product; a plantation-harvested, kiln-dried, adhesive-bonded panel qualifies as “innovative” for grant and procurement purposes regardless of actual carbon performance. The LIMBER Timber Act of 2026 (H.R. 7245) is more specific: it uses “mass timber” as its operative statutory term and ties three new tax credits to that defined category. The two terms are doing different work in the apparatus — the broad “innovative wood products” framing keeps the grant and procurement gates wide open, while the narrow “mass timber” framing locks specific tax preferences to the IBC construction-type architecture.
- 'Mass timber construction credit' is a tax code entry. Once embedded, it requires active congressional effort to remove rather than active effort to maintain. The burden of proof has been reversed: timber's subsidy is the default; eliminating it requires legislation.

5.3 Government Document Adoption Trail — The Receipts

The new terms were adopted by government agencies before they were validated by independent science. The sequence of adoption:

Date	Government Document / Body	Term Used	Significance
Apr 2018	EPA Biomass Policy Statement (Pruitt)	'Forest biomass' declared carbon neutral	Carbon neutrality declared for all wood products — before 'mass timber' even exists in the IBC
2019	ICC Final Action Hearings — 2021 IBC	'Mass timber' — Types IV-A/B/C	Term enters building code; AF&PA/SLB/AWC drafting in ICC public record
2021	USDA FS grant announcements	'Mass timber' replaces 'CLT' in all grant language	Federal grant program adopts IBC terminology — grant language appears to have shifted toward the broader IBC category
2022	GSA Federal Procurement — Low Embodied Carbon	'Mass timber' listed as qualifying low-carbon material	Federal procurement uses IBC term; WoodWorks Calculator (zero biogenic default) cited as source
2023	S.1094 Fix Our Forests Act — Senate	'Innovative wood products'	DoD procurement preferences; term undefined with insufficient precision to exclude any timber product
2025	H.R. 7245 LIMBER Timber Act	'Mass timber construction credit' — tax code	'Mass timber' is now a defined term in US federal tax law
2026	Trump EO 14225 (Mar 2025) + USDA ESD ~113M acres (May 2025)	'Forest products' / 'wood products'	Broadest possible term; emergency powers; no material-specific constraint
2026	USDA $95M Wood Innovations announcement	'Innovative wood uses' / 'wood-based construction'	Grant language maximally broad — any wood product, any application, qualifies

5.4 The Congressional Research Service Finding

One of the clearest documentary points in the record on this terminology and program-attribution question comes not from a critic of the timber industry but from Congress's own research arm:

> *'It is not always clear what specific FS mission area or authority has supported each of these activities.' — Congressional Research Service, on USDA Forest Service WoodWorks partnership activities.*

The Congressional Research Service has noted that the lines between USDA Forest Service program activities and the supporting authorities for those activities are not always clear. The verbatim language from CRS Report R47752: “It is not always clear what specific FS mission area or authority has supported each of these — and other — activities.” The activities the CRS report references include FS partnerships with WoodWorks, Think Wood, and other industry groups, and FS research support that contributed to the 2021 IBC mass timber code changes.

The Softwood Lumber Board's own published program documentation describes those programs in the SLB's own terms: WoodWorks "works directly with design and construction teams to support and influence projects, with the goal of facilitating a shift toward wood" (softwoodlumberboard.org/funded-programs); SLB describes WoodWorks' "role of converting projects to wood" as supported by Think Wood and AWC (softwoodlumberboard.org/why-it-works). SLB reports that its programs "directly influenced 1,498 projects to choose wood" in 2024 (629 million board feet of incremental lumber demand), and have cumulatively influenced 3,510 projects since 2015 (6 billion board feet of incremental demand). SLB's stated target is 2.9 billion board feet of additional annual incremental demand by 2035. "Support," "influence," and "convert" are the terms the SLB itself uses in published documentation to describe its program activities — activities supported in part by USDA Forest Service partnership.

5.5 The GWP Convention: Same Building, Different Accounting, Different Verdict

The terminology shift discussed above corresponds to a documented pattern of variance in the scientific literature. The mechanism is described in peer review:

Accounting Method	CLT Result	Basis	Where This Number Circulates
Biogenic credit applied (WoodWorks/EPA 2018 default)	288.5 $kgCO_2eq/m^2$ (CLT building, biogenic carbon included)	ISO 14040 attributional LCA with biogenic neutrality convention	LEED submissions; ESG classifications; WoodWorks case studies; AI training data; government procurement
No biogenic credit (full-boundary consequential LCA)	454.2 $kgCO_2eq/m^2$ (CLT building, biogenic carbon excluded)	Consequential LCA; biogenic emissions treated as real atmospheric loads	Minority of peer-reviewed literature; DRL full-boundary accounting
Swing between the two	~166 $kgCO_2eq/m^2$ swing on the same building (Andersen et al. 2022); ~605 $kgCO_2eq/m^2$ across the literature (Li et al. 2025)	Accounting policy choice — not measurement error, not scientific dispute	Not disclosed in industry literature, government documents, or AI outputs

Sweden prohibits landfilling combustible waste, including wood, because anaerobic decomposition in landfill conditions produces methane — a short-lived but potent greenhouse gas with an IPCC AR6 GWP-100 of 27–30 and an AR6 GWP-20 of 81–83 (Forster et al., IPCC AR6, 2021). The United States, under EPA's 2018 biomass policy statement, treats forest biomass combustion at stationary sources as carbon-neutral for regulatory purposes — a policy determination the EPA's own document describes as "not a scientific determination." Same physical material. Same anaerobic decay pathway when landfilled. Different regulatory treatment in different jurisdictions. Both are called "LCA."

The Nature Communications paper (May 2025) — the headline figure circulating in policy — projects 25.6–39.0 $GtCO_2e$ net reductions from CLT to 2100. The paper's own methodology section acknowledges end-of-life methane impacts are 'minor due to the small quantity of CLT

reaching end-of-life in the early modeling period.' The methane bill is real. It is just scheduled to arrive after the harvest window closes.

5.6 The AF&PA Contradiction — Same Day, Public Record

One of the clearest single points on the public record is a documented same-day contrast between the government agency and the industry body responding to it:

Who Said It	What They Said	Date
EPA Biomass Policy Statement (Scott Pruitt, Administrator)	'This is not a scientific determination.'	April 23, 2018
American Forest and Paper Association — official press release	'[The decision] reflects long-standing scientific principles.'	April 23, 2018

Both statements are public record from the same date. They reflect substantially different characterisations of what the EPA's policy statement does and does not represent. Many downstream policy instruments — building codes, procurement preferences, tax credits, LCA calculators, peer-reviewed paper defaults, and AI training data — appear to operate on the assumption that the underlying biogenic-carbon-neutrality convention has scientific standing, the framing closer to AF&PA's characterisation than to the EPA document's own self-description.

6. The Policy Capture Architecture

6.1 EPA Biomass Declaration — April 23, 2018

On April 23, 2018, EPA Administrator Scott Pruitt issued a Statement of Policy declaring that EPA would treat forest biomass combustion at stationary sources for energy production as carbon-neutral in future regulatory actions. The Statement applies, by its own text, to combustion of biomass at stationary sources for energy — not directly to mass timber construction. Its load-bearing language is in the document itself: “this statement of agency policy is not a scientific determination and does not revise or amend any scientific determinations that EPA has previously made.” The biogenic-carbon-neutrality convention used in mass timber LCA is older and broader than the EPA 2018 declaration; it derives from ISO 14040/14044 and IPCC inventory guidelines developed in the 1990s and 2000s. The 2018 EPA Statement is the most prominent US federal articulation of biogenic neutrality as policy choice rather than scientific finding, and it was issued at Congressional direction following industry advocacy. Every downstream US instrument that relies on biogenic neutrality — in regulatory accounting, federal procurement, building-code carbon claims, and tax-credit qualifying language — runs on a convention the EPA's own originating document describes as non-scientific.

6.2 USDA Wood Innovations — The Grant-to-Code Pipeline

USDA reports more than $93 million distributed to 381 recipients between 2015 and January 2023 (USDA press release, January 31, 2023). The May 2024 round added approximately $74 million across three Wood Innovations grant programs (171 projects in 41 states); the FY2026 round announced February 18, 2026 totals up to $95 million and is explicitly tied by USDA to Trump Executive Order 14225. Recipients of these grants include WoodWorks, which distributes a Carbon Calculator free to architects whose default biogenic-carbon treatment aligns with the EPA 2018 policy position rather than with the consequential-LCA convention found in much of the peer-reviewed literature. The calculator is used in LEED qualification, ESG classification, and federal procurement preference applications. It is an industry-funded LCA tool with USDA partnership and government endorsement, distributed at no cost to the specifier community. No equivalent dedicated, federally-backed market-development calculator exists for any competing structural material.

6.3 IBC 2021 — Industry Drafted, Federally Researched, Code Adopted

The 2021 IBC mass timber provisions (Types IV-A, IV-B, IV-C — up to 18 stories) emerged from the ICC Ad Hoc Committee on Tall Wood Buildings, formed in 2015 at the request of the American Wood Council and supported by USDA Forest Service fire and seismic research (CRS R47752). AF&PA, the Softwood Lumber Board, and AWC participated in the ICC public comment process; AWC describes itself as the “industry's signature program for the development of codes, standards and regulations.” According to the AWC Code Adoption Map, a substantial majority of US states have adopted the 2021 IBC tall mass timber provisions either statewide or at the jurisdiction level. No equivalent new construction-type pathway exists in the IBC for aluminum or steel modular systems.

6.4 The LIMBER Act — The Harvest Deadline Codified in Law

The mass timber tax credits in HR 7245 are drafted to expire December 31, 2030, which closely aligns with the closing of the optimal harvest window for the late-1980s and 1990s loblolly plantation wave. A Federation of American Scientists policy paper advocating for LIMBER cited the NLIHC 7.3-million-unit gap as central justification. The bill's expiration timing more closely matches the harvest-window timing than it matches any independently established housing-crisis timeline.

6.5 Trump Executive Order 14225 (March 2025) and the Subsequent ESD — The Final Instrument

Executive Order 14225, “Immediate Expansion of American Timber Production,” was signed March 1, 2025. The order directs the Secretaries of Agriculture and Interior to develop plans to increase timber production on federal lands and to streamline Endangered Species Act consultations. The U.S. Forest Service has subsequently set a goal of increasing timber offered for sale by 25 percent over four to five years. A subsequent USDA Secretarial Memo from Secretary Brooke Rollins established an Emergency Situation Determination encompassing approximately 113 million acres — roughly 60 percent of National Forest System lands — within which the Forest Service can fast-track logging by shortening environmental safeguards, public participation, and legal review timelines. The two instruments together compress the federal-land supply chain at exactly the moment the harvest window demands maximum throughput, and form the most recent layer in an architecture that has been assembling since 2014. The USDA's February 2026 announcement of up to $95 million in Wood Innovations grant funding cited EO 14225 directly as the policy frame for the funding round — the agency itself describes the executive order and the grant apparatus as one initiative.

6.6 Specifier-Side Engagement With the Underlying Carbon-Accounting Question

The carbon-accounting questions described above are not unaddressed inside the AEC profession itself. Corgan, a major US architecture firm with substantial commercial and institutional practice, published its own analysis in 2024–2025 arguing that mass-timber life-cycle assessments as conventionally calculated may omit biogenic-carbon emissions from forest slash, harvest residues, and end-of-life pathways — and the firm released a public-facing tool to help designers account for emissions it identifies as currently omitted. Corgan's analysis cites World Resources Institute research on related omissions. This matters for the broader policy discussion because it represents independent specifier-side engagement with the same accounting questions raised by this paper, funded by a specifying firm rather than by federal grant programs. How that engagement develops will say something about whether the current configuration remains stable or evolves through the AEC profession's own initiative.

7. The Affordable Housing Crisis: Crisis Capture, Not Crisis Solution

The affordable housing crisis is not manufactured. The 7.3-million-unit gap for extremely low-income renters (NLIHC) is real and pre-existing. What the federal apparatus described in Section 4 did was establish itself in the policy solution space during the same period in which the loblolly plantation harvest window was opening.

> *Reagan's first HUD budget substantially reduced new housing construction subsidies in 1981. The accumulated housing-supply gap has compounded over the four decades since. The federal apparatus advocating mass timber as a housing-cost solution emerged during the period in which the late-1980s and 1990s plantation harvest window was opening — a sequencing point that this paper raises rather than asserts as causal.*

7.1 What the Housing Crisis Actually Requires

The documented drivers of housing cost are land cost, zoning restriction, financing availability, and labor productivity. Material cost represents approximately 15–20% of total residential construction cost. A shift from dimensional lumber to mass timber does not address any of the four primary cost drivers. The LIMBER Act advances timber industry revenue. The IBC mass timber provisions advance timber industry demand. The affordable housing framing is the political vehicle.

7.2 What the Anyplace System Addresses, and Why It Falls Outside the Current Funding Structure

The Anyplace Modular System, as described by the author, addresses labor productivity (the dominant cost driver) through industrialized production. It addresses financing structure through the Rooms Like Cars economic model, decoupling dwelling from long-term land-based debt. It addresses material lifecycle cost through high resource recovery — reducing replacement cycle cost. None of these attributes qualify the system for Wood Innovations funding. None trigger a LIMBER Act credit, as drafted. None map to a recognised IBC construction type for aluminum modular framing. A system the author argues directly addresses housing cost drivers does not appear, on the basis of this review, to be served by the federal funding channels established for the wood-construction-market-development apparatus described in Section 4.

8. The Carbon Accounting Foundation: Non-Scientific by Admission

The mass timber policy and funding architecture depends on a carbon-accounting convention — biogenic carbon neutrality — that the most prominent US federal articulation of the convention, the EPA's April 23, 2018 Statement of Policy, describes as “not a scientific determination.” The convention is older than the EPA Statement and originates in ISO 14040/14044 and IPCC inventory guidelines, but its application to mass timber construction in US federal procurement, building code carbon claims, and tax-credit qualifying language relies on the EPA Statement's regulatory affirmation.

The peer-reviewed literature shows extreme variance in mass timber LCA results that is largely driven by accounting-method choice rather than physical measurement. Andersen et al. (2022) report 454.2 $kgCO_2eq/m^2$ without biogenic carbon and 288.5 $kgCO_2eq/m^2$ with biogenic carbon for the same CLT building — a swing of approximately 166 $kgCO_2eq/m^2$ produced by the choice of accounting convention alone. Across the published literature, mass timber building-level emissions (cradle-to-gate) range from −170.31 to 434.62 $kgCO_2eq/m^2$ (Li et al. 2025), and at the material level from −686.80 to 1,718.00 $kgCO_2eq/m^3$ — variability that systematic reviews attribute to inconsistent biogenic-carbon treatment, system-boundary definitions, and end-of-life assumptions rather than to measurable physical difference. Pomponi and Moncaster (2018) documented embodied-carbon variations of 284–1,044 percent across structural materials. When WoodWorks-distributed tooling defaults to the favorable end of the biogenic accounting choice, and AI systems, ESG raters, and code-compliance tools are trained on that output, the non-scientific accounting choice reproduces at machine speed and scale across every downstream decision.

Aluminum and steel — described in this paper as permanent material reserve alternatives — do not biologically decompose and do not generate methane through anaerobic decay. Their recyclability is high, with retention of material quality varying by alloy, contamination, and collection-system design. Their lifecycle accounting is not subject to the biogenic-carbon-convention uncertainty discussed above. The estimated $190–220M federal apparatus described in this paper, which appears to advantage timber over these alternatives in construction-market development, rests on a carbon-accounting convention that the EPA's own 2018 statement describes as not a scientific determination.

8.1 Independent Peer-Reviewed Corroboration: Searchinger and Peng (Nature 2023)

The biogenic-carbon-accounting concern raised in this paper is not the author's alone. In July 2023, Peng, Searchinger, Zionts, and Waite published “The Carbon Costs of Global Wood Harvests” in Nature (Vol. 620, pp. 110–115; DOI: 10.1038/s41586-023-06187-1). The paper, authored by researchers at the World Resources Institute and Princeton University, estimates that conventional carbon-accounting approaches systematically undercount global wood-harvest emissions by 3.5 to 4.2 gigatonnes of CO2-equivalent per year over the coming decades — roughly ten percent of recent annual global emissions, more than three times annual aviation emissions, and approximately equivalent to the carbon impact of agricultural land-use change. The paper's central methodological argument is that the prevailing biogenic-carbon-neutrality convention, applied to wood harvests under most national greenhouse-gas-

accounting frameworks, treats carbon released by harvesting as offset by regrowth elsewhere in the forest estate. The authors argue this offset is inappropriate where the regrowth would have occurred regardless of new harvesting; the appropriate counterfactual, in their analysis, is the carbon a forest would store if not newly harvested.

The Peng/Searchinger paper has been the subject of subsequent peer-reviewed exchange in Nature. In October 2025, Sohngen, Baker, Favero and colleagues published a Matters Arising critique (Nature 646, E18–E19) arguing that the no-harvest counterfactual approach should not be adopted by greenhouse-gas measurement protocols or the IPCC. Searchinger, Berry, and Peng published a Reply (Nature 646, E20–E23) defending the methodology and clarifying its scope. The exchange is ongoing in the journal record. What this paper notes is that the underlying scientific question raised by the EPA's 2018 self-description — whether the biogenic-carbon convention used in regulatory accounting and downstream policy instruments is a scientific or a policy determination — is now actively contested in peer-reviewed Nature literature, with researchers from Princeton, WRI, Yale, and Ohio State publishing on either side. The DRL framework on which this paper rests is, in this respect, not making a novel scientific claim; it is applying a documented and currently-debated peer-reviewed challenge to the U.S. domestic-policy configuration described in Sections 1 through 6.

9. Configuration, Not Conspiracy: Why the Distinction Matters

The DRL thesis is precise on this distinction because it determines how the argument survives scrutiny. There is no evidence of back-room coordination. No smoking-gun memo. What exists is a configuration — multiple institutional actors, each acting rationally in their own interest, whose interests converge on the same policy outcome at the same historical moment for biological reasons nobody planned but everybody benefits from.

- The TIMO fund manager whose 1993 plantation is ready to harvest wants demand for wood products.
- The AF&PA lobbyist wants the biogenic carbon convention intact.
- The USDA Forest Service wants to justify its land management budget.
- WoodWorks wants to convert architects to wood specification.
- The IBC committee member wants to demonstrate sustainability responsiveness.
- The congressional timber-district member wants to address housing costs in their district.
- The affordable housing developer wants cheaper materials with green credentials.
- The ESG fund manager wants a sustainable classification that stands up.

> *None of these actors needs to coordinate for the configuration to function as it does. The harvest cycle of plantations established under Reagan-era tax policy and ERISA-era institutional capital flows aligns the timing. The federal apparatus described in this paper appears to function as the demand-creation layer. The funding asymmetry described in Section 4 appears to function as the principal exclusion of competing materials. The biogenic-carbon-accounting convention, articulated in policy by the EPA's 2018 statement and rooted in older ISO and IPCC frameworks, functions in practice as a price advantage for wood. The housing crisis provides the political context in which the apparatus is presented as a solution.*

10. Implications: What the Funding Asymmetry Means for Housing Innovation

The funding structure described in this paper appears to do more than slow adoption of competing materials; the structure does not appear to provide a comparable pathway for them within the current harvest window. The LIMBER credits as drafted expire in 2030. The optimal harvest window closes around 2030. Any competing material system — regardless of technical merit, environmental performance, or housing cost advantage — that cannot reach political and market deployment scale before 2030 may face the simultaneous expiration of the supporting subsidy framework, without an evident replacement at this writing.

The Anyplace Modular System faces this structural exclusion directly. Three granted patents (US9598852B2, NZ722998, AU2015349919B2). Eight completed pilots across two countries. Field-tested industrialized housing system using permanent material reserves rather than biogenic feedstock. No Wood Innovations equivalent to apply to. No IBC construction type for aluminum modular framing. No LIMBER credit for permanent material reserve construction. No WoodWorks-equivalent calculator distributed free to architects.

The 11-year Living Laboratory audit that produced the Anyplace system is, the author argues, the kind of empirical, deployment-ready knowledge the housing crisis requires. On the basis of this review, that work is not served by the federal funding apparatus that has materially benefited the timber industry through alignment with its harvest cycle.

The question for policy, for institutional reviewers, and for the innovation ecosystem is whether a federal apparatus whose timing aligns with one material's harvest cycle should continue to define the solution space for a housing crisis to which the policy choices documented in Section 1 materially contributed — and whether the funding asymmetry described in Section 4 should remain in its current form once it is examined and named.

11. The Receipts: Source Documentation

Every major claim in this paper is traceable to a public document, public filing, or documented statutory instrument.

Claim	Source	Key Evidence
Wood Innovations: $93M+ cumulative 2015–2025	USDA Forest Service grant records	381 recipients; 100 wood markets projects, 36 mass timber in 2024 alone
Wood Innovations: up to $95M for FY2026	USDA FS announcement, February 2026	Publicly announced competitive grant round

Claim	Source	Key Evidence
SLB / USDA joint investment ~$100M	SLB annual reports; USDA FS partnership documentation	Formalized 2015 alliance; WoodWorks, ThinkWood, AWC co-funded
No 'Steel Innovations' federal program	Program search: USDA, DOE, HUD	Does not exist as a construction market development program
No 'Aluminum Innovations' federal program	Program search: USDA, DOE, HUD	Does not exist in any form for building construction
EPA 2018 biomass declaration: non-scientific	EPA April 23, 2018 policy statement	Document states: 'this is not a scientific determination'
LIMBER Act credits expire Dec 31, 2030	LIMBER Act statutory text	Expiration date matches biological harvest window close
IBC 2021 mass timber: industry-advocated, USDA-research-supported	ICC final action hearings; AF&PA, SLB, AWC filings	Three new Type IV construction types
2021 IBC tall mass timber: substantial majority of states adopted (AWC Code Adoption Map)	AWC Code Adoption Map (awc.org/priorities/codes-standards/adoption); WoodWorks status page	As of 2025; no equivalent for aluminum modular
WoodWorks Carbon Calculator: biogenic carbon treatment per published methodology (default usage subject to verification)	WoodWorks tool documentation	USDA-endorsed; distributed free; used for LEED/ESG
Loblolly pine harvest: 25–33 years	USDA FS Southern Research Station; Auburn / NCSU forestry lit	Rotation age standard for sawtimber optimization
Reagan ERTA 1981 cap gains: 28% → 20%	Economic Recovery Tax Act of 1981	Statutory rate reduction
Reagan FY1982 HUD: Section 8 new construction terminated; budget halved to ~$17.5B	NLIHC “Changing Priorities” (Dolbeare 2002); Cato Policy Analysis No. 127	Section 8 new construction terminated
NLIHC: 7.3M unit gap	NLIHC Out of Reach / Gap reports (annual)	Affordable units needed for extremely low-income renters
Rayonier/PotlatchDeltic all-stock merger announced October 14, 2025	SEC filings; merger proxy statement	4.2M acres timberland (3.2M US South, 931K Pacific NW); 1.2 BBF lumber manufacturing capacity; second-largest US timber REIT post-close
Trump EO 14225 (Mar 1, 2025): Immediate Expansion of American Timber Production; subsequent USDA ESD	EO 14225 (Mar 1, 2025); USDA Secretarial Memo (Rollins) establishing ESD	~113M acres, ~60% of NFS lands; expedited consultation; cited in February 2026 USDA grant round

Claim	Source	Key Evidence
~113M acres		

12. Conclusion: The 40-Year Clock and the Asymmetry That Aligned With It

In 1981, Ronald Reagan signed two pieces of legislation on the same desk. One planted the trees. The other eliminated the housing. Four decades later, the trees are ready to harvest, the housing deficit has compounded to 7.3 million units, and the federal apparatus built to meet the biological deadline has installed itself as the only funded path to a solution.

The funding asymmetry described in Section 4 appears, on the basis of this review, to be the principal mechanism that gives this configuration durability. Absent the estimated $190–220 million in co-invested federal and industry market-development spending, the timber harvest window would more closely resemble a private financial question. With that spending, the harvest window has become a matter of public housing policy. The biogenic-carbon-accounting convention provides environmental framing. The IBC construction types provide regulatory legitimacy. The LIMBER credits, as drafted, would provide a tax-policy alignment with the biological timing. The WoodWorks-distributed tooling and program family provide specifier reach. The housing crisis provides the political context in which the apparatus is presented as a solution.

> *The legislative and fiscal foundations were laid in 1981. The construction-market-development apparatus described in this paper was assembled between 2014 and 2026. The harvest window closes around 2030. Competing materials — steel, concrete, aluminum — appear, on the basis of this review, not to be served by comparable federal innovation funding. This outcome did not arise from an open materials-innovation competition; it has emerged from a forty-year alignment of fiscal, financial, regulatory, and program-development activities that this paper documents and questions.*

The Anyplace Modular System is not asking to be subsidised at the same rate as mass timber. It is asking, in effect, for a federal innovation marketplace that includes it — a marketplace that, on the basis of this review, has been shaped to align with the asset class whose harvest window closes around 2030.

Naming the configuration is the first step. Auditing the funding asymmetry is the second. Designing a materials-neutral federal housing innovation apparatus is the third. All three depend on the same foundational act: documenting that the apparatus exists, that it is funded, and that its funding is not a coincidence.

— END OF DOCUMENT —

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