



TIMBERLAND
INVESTMENT RESOURCES^{LLC}

**Thinking Outside the House:
How In-Shoring and Infrastructure Spending
Can Benefit Timberland Investments**

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Introduction

When we think of uses for wood, many of us conjure up home construction. For that reason, timberland investors often pay close attention to housing statistics such as housing starts and home sales to better understand the performance of their timberland portfolios. There is a good reason for that. Nearly 40% of all softwood lumber consumed by volume in the United States comes from home repair and remodeling (Figure 1). The building of new homes – whether they are single-family houses, townhomes, apartments or condominiums – typically makes up another 30% or more. This follows a decade of growing demand where lumber use from home repair and remodeling grew at a 2.7% average annual rate between 2014 and 2024 and new home construction at 3.0%.

However, housing is not the only factor that drives lumber use. An estimated 28% of the 52 billion board feet of lumber consumed in the U.S. in 2024 went into uses that are outside of housing sectors: 22% industrial production and 6% non-residential construction. Likewise, wood panels such as plywood and oriented strandboard (OSB) offer a similar breakout with 20% going into industrial use and another 11% in non-residential construction. Translated into timber, an estimated 14% of all softwood¹ harvested in the U.S. went into industrial production and another 4% went into non-residential construction (Figure 2).

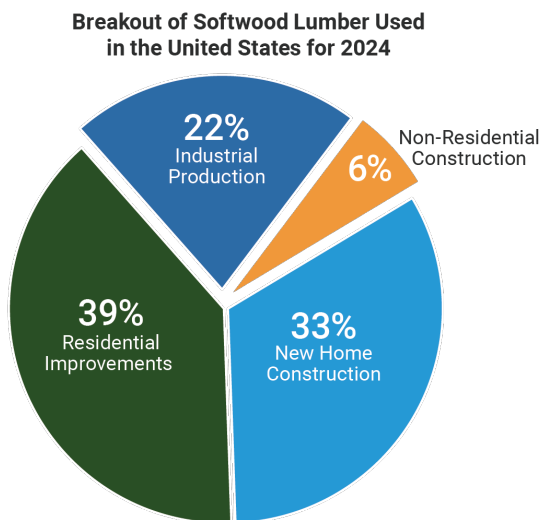


Figure 1. Source: Forest Economic Advisors, *Lumber Quarterly Forecast 2024 Q3*

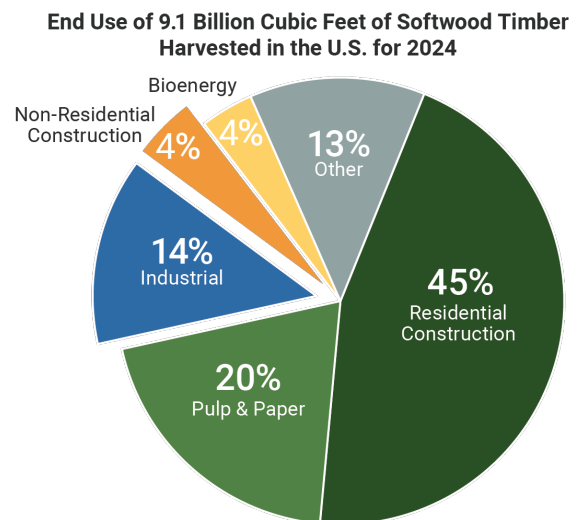


Figure 2. Sources: Fastmarkets RISI 5-Year Timber Forecast 2024; Forest Economic Advisors, *Lumber Quarterly Forecast 2024 Q3*. The “Other” category includes exports, fuelwood, and losses from harvesting.

¹ Softwoods (also known as conifers) is the dominant timber category in the U.S. About 71% of the 2024 commercial timber harvest by volume is softwood. The remaining 29% is hardwoods.



Looking ahead, certain economic trends are expected to push wood use outside the housing sector higher. These include:

- (a) Investments in domestic manufacturing;
- (b) expansion and upgrading of infrastructure; and
- (c) growing demand for wood-based construction in commercial buildings.

This paper will begin with a discussion on the key components of non-residential wood demand. It will follow with a review of major macro trends that are likely to drive greater demand for lumber and panels across industry and commercial real estate. Finally, we will wrap up with an assessment of how these trends could impact U.S. timberland investment for the coming decade.

Key Components of Non-Residential Wood Demand

Industrial Production

Outside home construction, industries across a variety of sectors use wood in many important ways. Consequently, wood usage often tracks manufacturing output, industry activity, and infrastructure spending. Figure 3 highlights some of the industrial uses for solid wood products. As pictured, they include pallets, crates for fruit and machine parts, road mats and rig mats for the oil & gas industry, utility poles, pilings, liners for semi-trailers, and railroad ties. Wood also serves as an input for the manufacture of many finished goods such as furniture, kitchen cabinets, doors, bourbon whiskey barrels, and sports equipment (e.g., bats and hockey sticks).

A Selection of Industrial Uses for Wood

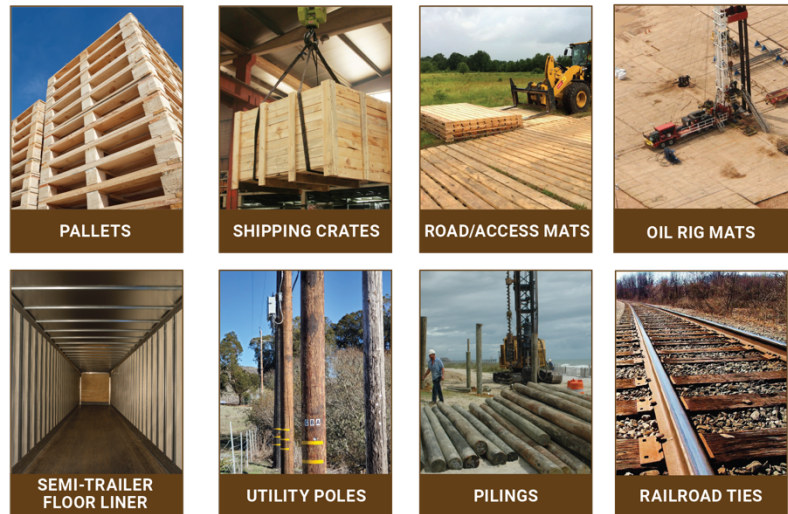


Figure 3.



Non-Residential Construction

Examples of Wood Use in Non-Residential Construction



Figure 4.

A smaller slice of lumber is used for non-residential construction. The dominant non-residential building materials remain concrete, steel, and masonry. Nevertheless, wood is a critical component in steel and concrete structures because lumber and plywood are used in making concrete forms (Figure 4).

In addition, technological advances are making it easier to build large, multi-story buildings from wood. Innovation in wood-based building materials and advances in building codes have enabled more schools, hospitals, office buildings, and retail stores to be built with wood. The greatest advances are in engineered wood products, which bond lumber, veneer or wood flakes together to form long beams and wide panels of great strength. A couple of examples are shown in Figure 4.

Macro Trends to Affect Future Timber Usage

In 2024, 14 billion board feet of softwood lumber were used in the U.S. for industrial production and the building of non-residential (a.k.a. commercial) structures. Total board feet volume is slated to grow in the coming years due to three macro-level trends:

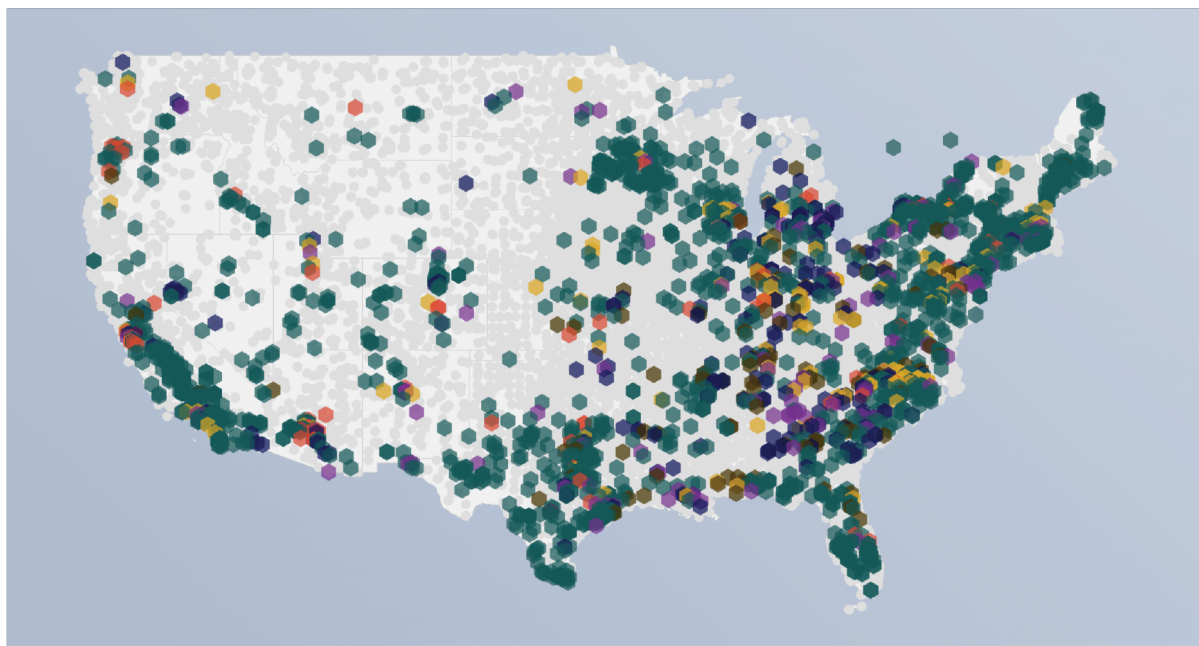
- **Public Policy Support:** Accommodating government policy towards domestic manufacturing and infrastructure
- **Investment in Domestic Manufacturing:** Private businesses channeling more investment into the U.S. to reduce risks or lower costs
- **Demand for Wood-Based Construction:** Rising attraction to build with wood for its environmental and societal benefits



Government Support of Manufacturing and Infrastructure

Over the past decade, there has been a growing consensus among Congress and the presidential administrations that the manufacturing sector and infrastructure in the U.S. has declined, and the U.S. government should play an active role in promoting both. The culmination of that movement was a trifecta of laws passed during the Biden Administration: the *Bipartisan Infrastructure Law* (2021); the *CHIPS and Science Act* (2022); and the *Inflation Reduction Act* (2022). These three pieces of legislation use grants, subsidies and tax credits with the aim of encouraging more investment into domestic manufacturing of advanced technology and clean energy, as well as to upgrade the nation’s transportation infrastructure.

Announced \$1 Trillion in Private Investments in U.S. Advanced Manufacturing as Tracked by the White House Since 2021



- | | |
|-----------------|----------------------------|
| Semiconductors | Clean Energy Manufacturing |
| Batteries / EVs | Biomanufacturing |
| Heavy Industry | Clean Power |

Figure 5. Source: www.whitehouse.gov/invest/?utm_source=invest.gov



These three pieces of legislation – alongside other forms of government support at the federal and state level – are expected to spur new private investments in advanced manufacturing. According to the White House, private companies have placed or committed close to \$1 trillion across the United States. See the map in Figure 5. This includes \$446 billion in semiconductors and electronics, \$180 billion in EVs and batteries, \$84 billion in clean energy manufacturing and infrastructure, and \$64 billion in biomanufacturing.²

The government backing for manufacturing is likely to continue with the new administration following the 2024 election. President-elect Trump has promised support for domestic industry through lower taxes, a lower regulatory burden, and potentially a more protectionist trade policy through tariffs (see call out box).

Will the Trump Administration Scramble the In-Shoring & Infrastructure Calculus?

At the time of writing, we do not know how the new administration led by President-elect Trump will alter the standing policies of the Biden administration towards domestic manufacturing and infrastructure. It is well understood that the new administration is supportive of domestic manufacturing and improving infrastructure. What could happen is that there could be a shift in support for some sectors over others.

For instance, the administration may deemphasize green-energy initiatives (such as electric cars) and promote fossil fuel extraction such as fracking and off-shore drilling. Furthermore, the potential for higher tariffs on imports from China and other trading partners could accelerate the in-shoring of manufacturing to the U.S.

Redirecting Business Investment Back to United States

Government assistance aside, many companies have decided to refocus their investments towards the U.S. and less offshore. This is sometimes referred to as “in-shoring.”

Amid growing geopolitical uncertainty, companies increasingly see supply chain de-risking and resiliency as important – if not more important - than minimizing costs. The shortages created during the Covid-19 pandemic in 2020, trade friction between U.S. and China, and the Russian invasion of Ukraine that led to the cut off of key supplies for oil, gas, and metals highlighted the danger of having extended supply chains that were vulnerable to disruption.

² Using living systems (like plant cells, fungi or microbes) in a manufacturing process to produce commercially important materials that can be turned into plastics, food, medicine and the like.



Figure 6. Source: World Bank, The Pink Sheet (www.worldbank.org/commodities)

In addition, the U.S. offers certain competitive advantages for industry such as a comparatively lower tax burden and lower regulation. But the decisive competitive advantage is low energy costs spurred by “fracking” in the oil and gas industry. The price of natural gas in the U.S., for example, is one-fifth that in Europe and in Japan (Figure 6).

Combined with the supportive government policies, these trends have led to fresh investments in new factories in the U.S. as evidenced by heightened spending in constructing new plants and factories (Figure 7). While industrial production has remained flat for the last few years, this wave of outlays in new manufacturing will likely create a significant uplift in U.S. industrial production in the coming years. With more manufacturing comes more wood use.

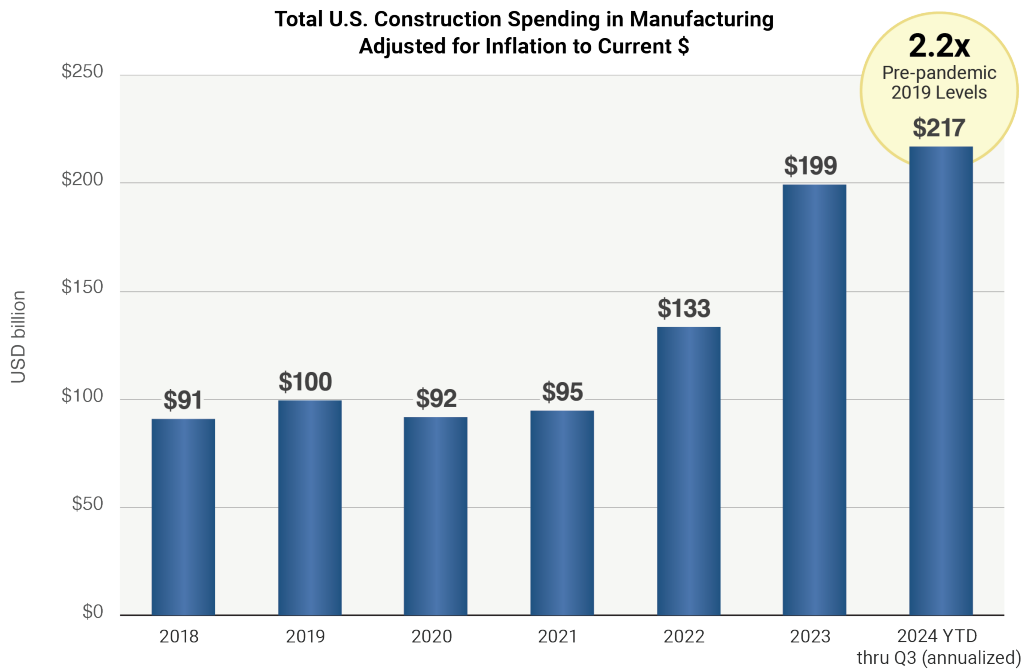


Figure 7. Source: U.S. Census Bureau for both construction spending data and consumer price index (for inflation)



Greater Wood Usage in Commercial Construction

In addition to wood use in industry and infrastructure, timber is also used in commercial construction. Here we see greater wood usage from both more commercial buildings being constructed and more of them being built with wood.

While it is true that there is an excess of office space across many metropolitan areas in the U.S., other forms of commercial buildings are in demand. They include laboratories, health care facilities, warehouses, and data centers. These have helped make up for the drop-off in office construction. As a result, construction of commercial structures, in terms of real dollars spent, has grown roughly 33% over the past five years (Figure 8).



Figure 8. Source: U.S. Census Bureau for both construction spending data and consumer price index (for inflation)



Another source of wood demand is the rise of *mass timber* construction. While its market share is small today, there is a growing demand for building large, multi-story buildings with wood. Known by the label *mass timber*, a 6-story or larger building can be made entirely from wood or a hybrid of wood with steel and concrete. The appeal of wood-based construction is its environmental features, as it offers excellent insulation while providing a much lower carbon footprint. Wood is a renewable resource that stores carbon while steel and concrete release carbon dioxide – a greenhouse gas – in their manufacture.

The leading construction material for many mass timber projects is cross laminated timber (CLT). CLT is made from bonding several layers of lumber into a very large, high-strength panel that can serve as weight-bearing floors or walls of a tall building. Forest Economic Advisors, an economic forecasting group focused on the forest products sector, projects CLT consumption to rise at a rate of 23% a year through 2026 (Figure 9). In response to rising demand, a slate of new CLT manufacturing capacity in North America is coming on-line. By 2026, FEA expects total CLT capacity will grow 25% over 2024 levels and could expand further as mass timber construction becomes mainstream (Figure 10).

Microsoft Builds Data Centers Out of Wood

In October 2024, Microsoft announced that it will build its new Northern Virginia data center with cross laminated timber (CLT) to help achieve its climate goals. The CLT will replace concrete for the floors and ceilings. A thin layer of concrete is then applied to the exposed wood panels to protect it from the elements. According to Microsoft, using wood will cut the data center’s carbon footprint by 35% compared to steel construction and 65% compared to concrete.

Building data centers with wood aligns with Microsoft’s goal to be net-zero (no net carbon emissions) by 2030.

Source: Tom’s Hardware (11/3/2024), “Microsoft claims timber-built datacenters can reduce its carbon footprint by up to 65%.”

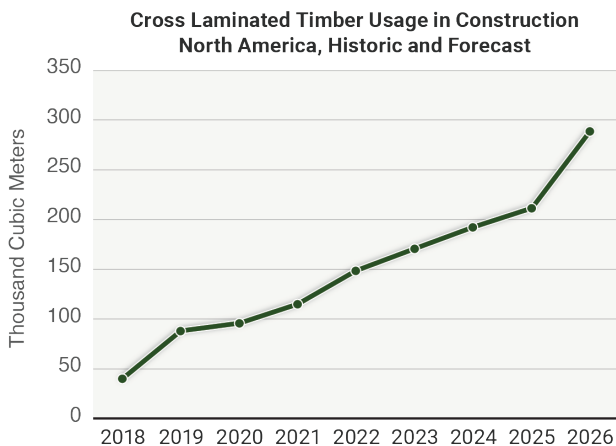


Figure 9. Source: Art Schmon of Forest Economic Advisors, “Mass Timber Overview,” Strategic Planning Webinar (Sept. 12, 2024)

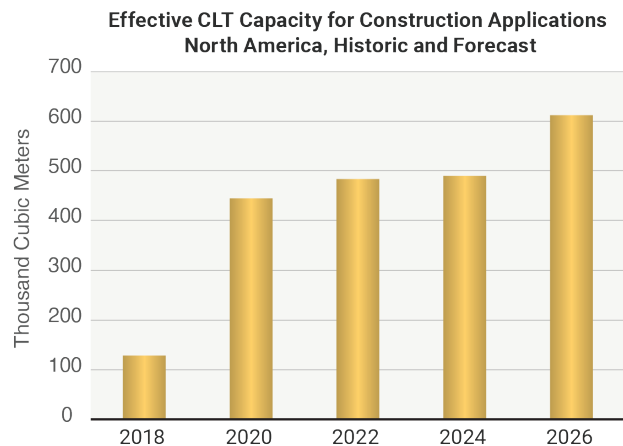


Figure 10. Source: Art Schmon of Forest Economic Advisors, “Mass Timber Overview,” Strategic Planning Webinar (Sept. 12, 2024)



Translating Re-shoring and Infrastructure Trends into Wood Demand

Altogether, we believe (a) the renewed push for domestic manufacturing, (b) the heightened spending on infrastructure, and (c) the growing attraction to build commercial buildings with wood will lead to increasing consumption of timber in the U.S. Sawtimber, the largest, highest-valued log grades, stands to benefit the most.³ These logs are large enough to be sawn into solid dimensional lumber or peeled into veneer, which can be made into plywood or laminated veneer lumber (LVL). Sawtimber of sufficient length, straightness, and diameter can also serve as poles or pilings. Sawtimber is the highest value log product. Thus, investors often generate a significant portion of their forest assets’ return from growing and harvesting this type of wood product.

Industrial and non-residential construction is expected to increase demand for lumber between 5% to 10% in the next 5 years (Figure 11). Within the decade, the gain could be 10%-15% above 2024 levels. This level of growth is expected to keep pace with the expected housing recovery.

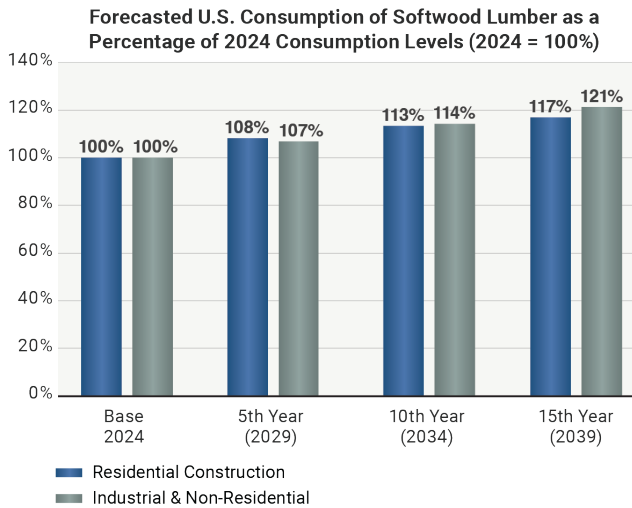


Figure 11. Source: Forest Economic Advisors *Lumber Quarterly Forecast 2024 Q3.*

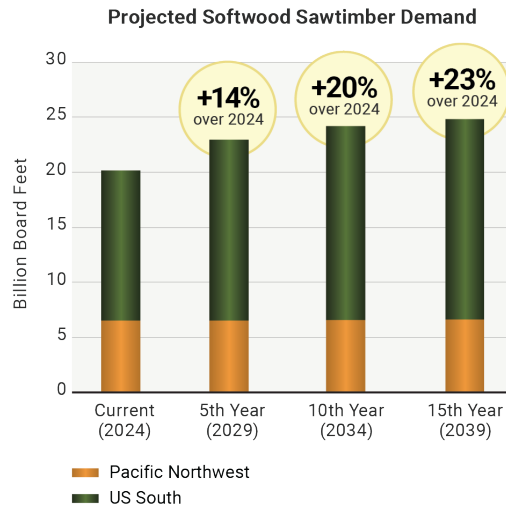


Figure 12. Source: Forest Economic Advisors *Timber Quarterly Forecast 2024 Q3.*

The combination of growing housing, industrial and commercial activity should lead to an increase in harvested and consumed sawtimber in the U.S. By FEA’s estimate, total U.S. harvests of sawtimber could increase by 20% over the next 10 years (Figure 12). The reason U.S. sawtimber demand is expected to grow faster than lumber demand is because imports from Canada and Europe, the two leading sources of U.S. lumber imports, are expected to decline amid increasing timber scarcity in those two regions, the result of years of insect infestations and wildfires along with tightening regulation on commercial forestry.

³ Sawtimber is typically refers to logs with a base diameter of greater than 8 inches (or 20 centimeters) and offers sufficient straightness and length to be cut into lumber. Pulpwood is any log that cannot qualify as sawtimber.



Conclusions and Recommendations

Timberland investors stand to benefit from an increasingly competitive and growing U.S. sawtimber market. Much has been written about an expected long-run recovery of the housing market that will underpin a sustained demand for lumber and wood panels.⁴ But, often overlooked is wood consumption from industrial activity and non-residential construction.

Manufacturing, infrastructure, and commercial construction contributes more than one-fourth of lumber demand in the U.S. and is expected to accelerate in the coming years. This growing demand together with the positive outlook in residential construction markets provide a strong basis for investor confidence the ability of their forestland portfolio to generate strong income and asset appreciation over the longer term.

We recommend a well-diversified portfolio that includes exposures to different types of markets, including those with access to natural capital markets as well as traditional log markets. It is also important to diversify across geography, species, and vintage year of investment. Taking a broader perspective of timberland—"beyond the house"—should provide investors with a better and more accurate insight into timberland's full and richer opportunity set.

⁴ See the TIR white paper, "A Brighter Outlook for U.S. Housing Over the Next Decade: Four Demographic Trends Timberland Investors Should Consider." (August 2024)



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