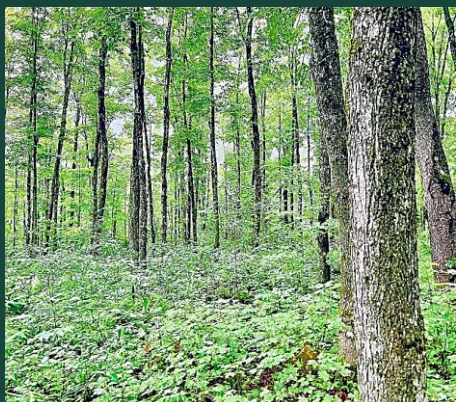




Forest Products Industries' Economic Contributions: Vermont, 2023

Prepared For:

Vermont Department of Forests, Parks and Recreation,
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On behalf of,

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Washington DC, USA

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Executive Summary

Based on 2023 FIA estimates, Vermont contains approximately 4.49 million acres of forest land, representing about 76.0 percent of its total land area. Of this forest base, 95.0 percent (4.27 million acres) is classified as timberland capable of producing commercial volumes of wood, while 5.0 percent consists of reserved or low-productivity forestland. Private ownership accounts for the majority of forest land at 80.0 percent (3.59 million acres), followed by state and local governments (9.8 percent; 0.44 million acres) and federal ownership (10.3 percent; 0.46 million acres). This report summarizes the economic contribution of forest products industries in Vermont using IMPLAN 2023 data. This report also captures the pre-and post-COVID snapshots of forest products industries in Vermont and shows the changes in last seven years (2017-2023).

Forest Product Industries

This report analyzes the economic contribution of Vermont's forest products sector, comprised of 27 individual economic sectors aggregated into seven industry groups: Forestry, Logging, Primary solid wood products, Secondary solid wood products, Wood furniture, Pulp, paper, and paperboard mills¹, and Secondary paperboard and other paper products. In 2023, these industries directly supported 7,700 jobs and generated \$1.56 billion in output, \$432 million in value added, and \$314 million in labor income. When indirect supply-chain linkages and induced household-spending effects are included, the sector's total economic footprint reached 11,409 jobs, \$2.33 billion in output, \$862 million in value added, and \$559 million in labor income. The sector exerts a significant multiplier effect on the broader economy; for every direct job in the forest industry, roughly 0.48 additional jobs are supported elsewhere in the state. Key non-forest sectors impacted include Wholesale Trade, Truck Transportation, Real Estate, Hospitals, and Restaurants, reflecting the substantial spending power of forest product companies and their employees.

Leading Forest Products Industry Groups (direct contribution)

Among the seven aggregated groups, Forestry was the largest direct employer in 2023 (2,941 jobs), driven largely by maple syrup production, followed by Wood Furniture (1,203 jobs) and Logging (1,145 jobs). In terms of output, Paper, and Paperboard Mills produced the highest direct output at \$478.7 million, serving as the sector's financial anchor. Primary Solid Wood Products generated \$387.1 million, while Secondary Solid Wood Products contributed \$288.2 million, highlighting the importance of the state's milling and construction supply chain. Wood

¹ Industry groups are categorized consistently across all 22 Northeast-Midwest state reports. During the report period, Vermont had operating paper and specialty paperboard mills, but these facilities either imported pulp or used 100% post-consumer recycled pulp. Vermont had no operating pulp mills.

Furniture (\$231.0 million) provided critical value-added manufacturing contributions. Secondary Paperboard and Other Paper Products was the smallest contributor in dollar terms (\$26.4 million), and with 53 direct jobs, while logging generated \$47.2 million in direct output with 1,145 direct jobs.

Leading Individual Forest Products Sectors (direct contribution)

At the disaggregated level (27 sectors), Maple Syrup Production was the top individual employer with 2,333 jobs. Financial dominance, however, was concentrated in manufacturing. Paperboard Mills ranked first in Labor Income (\$44.1 million), Value Added (\$73.7 million), and Output (\$380.0 million). Sawmills were a consistent top-tier performer, ranking second in Output (\$265.4 million) and Value Added (\$48.0 million). Non-upholstered Wood Household Furniture Manufacturing also emerged as a major driver, ranking third in direct output (\$142.4 million).

Vermont's Forest Products Industries Compared to Other Vermont Industries

The Forest Products sector remains the fiscal leader of Vermont's natural resource economy. In 2023, it ranked first in output when compared to Agriculture and Mining. The forest sector's direct output (\$1.56 billion) was roughly 1.7 times larger than Agriculture (\$911 million) and more than double that of Mining (\$688 million). In terms of employment, the 7,700 jobs supported by the forest industry accounted for roughly 43 percent of the state's total natural resources workforce, trailing Agriculture (8,526 jobs) but significantly exceeding Mining (1,460 jobs) and Commercial Fishing (65 jobs). Furthermore, within the statewide manufacturing landscape, Forest Products ranked as the second largest employer (3,603 manufacturing jobs), trailing only Food Manufacturing, and ranked third in total output (\$1.40 billion) behind Food and Computer/Electronic Products.

Seven-years Trends in Vermont's Forest Products Industries Economic Contribution

From 2017 to 2023, the sector underwent a period of consolidation and adjustment. Direct employment decreased by 15.4 percent, while direct output declined by 9.3 percent in real terms. Despite the contraction in workforce size, the quality of employment showed resilience: real labor income declined by 11.8 percent, a slower rate than employment, resulting in a 4.3 percent increase in the average real labor income per job.

Glossary

Forestry Terms

Average annual harvest removals: The estimated volume of trees that were live at the time of the previous inventory and were either cut and removed by direct human activity related to harvesting or died as a result of silvicultural or land-clearing activity by the time of the current inventory.

Average annual mortality: The volume of trees that were live at the time of the previous inventory and are dead in the current inventory.

Average annual net growth: The change in merchantable bole volume of growing-stock trees (at least five inches diameter at breast height [DBH]) after deducting mortality volume, in cubic feet, on forest land.

Forest land: Land that is at least 10 percent stocked by trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and non-forested lands that are at least 10 percent stocked with trees and forest areas adjacent to urban and built-up lands, including pinyon-juniper and chaparral areas in the western U.S., and afforested areas. The minimum area for classification of forest land is one acre and 120 feet wide, measured stem-to-stem from the outermost edge. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest land if less than 120 feet wide.

Growing stock: Live trees of commercial species that meet minimum merchantability standards (at least five inches DBH). In general, these trees have at least one solid eight-foot section, are reasonably free of form defect on the merchantable bole, and at least 34 percent or more of the volume is merchantable. Excludes rough or rotten cull trees.

Timberland: A subset of forest land that produces or can produce crops of industrial wood and is not withdrawn from timber utilization by statute or administrative regulation. (Note: Areas qualifying as timberland can produce at least 20 cubic feet per acre per year of industrial wood in natural stands. Currently inaccessible and inoperable areas are included.)

Economic Contribution Terms

Direct effects/contributions: The direct contribution represents the economic activities (output, employment, labor income, and value-added) that occur within an industry or sector as a result of its existing production to satisfy current (exogenous) final demand. In contribution analysis, the direct effect corresponds to the sector's own production activities that maintain the structure of the regional economy. For example, the direct contribution of the forest products industry reflects its ongoing production and employment required to meet current local and export demand for forest-based goods. **Employment:** The number of full- and part-time jobs associated with an industry.

Indirect effects/contributions: The indirect contribution captures the inter-industry linkages created when the industry purchases goods and services from other local industries. These transactions stimulate additional production, employment, and income along the supply chain. For instance, demand for wood products generates additional output in sectors such as transportation, wholesale trade, and equipment manufacturing that supply inputs to the forest industry. The magnitude of indirect contribution reflects the degree of interdependence and strength of local supply-chain relationships.

Induce effects/contributions: The induced contribution measures the additional economic activity generated by household spending of labor income earned through direct and indirect effects. When workers employed in the forest products and related supply-chain sectors spend their income on goods and services, such as housing, healthcare, or retail, it further stimulates regional economic activity. This household feedback effect represents the cyclical flow of income and expenditures within the economy.

Labor income: The dollar total of employee compensation and proprietor income; the latter is associated with self-employed individuals.

Output: The dollar measure of production within an area; it is also viewed as sales.

Social Accounting Matrix (SAM) multipliers: These multipliers are derived by dividing the sum of direct, indirect, and induced effects by the direct effects. The social accounts include payments made between households, households and government, and more. These are available for output, employment, labor income, and value-added and are used to assess the effects of changes in industry activity (i.e., "ripple effects").

Total effects/contributions: The sum of direct, indirect, and induced effects.

Value-added (also known as gross state product, or GSP): The sum of labor income, other property income (e.g., rents and profits), and indirect business taxes (e.g., excise and sales

taxes). It is the difference between an industry's total output and the cost of its intermediate inputs. The sum of value-added for all economic sectors within the region equals the total GSP.

Introduction

Forest products industries are an integral component of Vermont’s economy. They provide jobs, raw materials, and finished goods that generate additional economic activity throughout the state, region, and nation. Forests in Vermont have always supported local and state economies and generated employment and income (Leefers 2014, 2015; Poudel, 2022). These forests form the foundation for a wide array of industries, supporting logging, sawmills, paper, wood products manufacturing, and furniture production. Collectively, the Forest Products Industry (FPI) contributes directly to the economic development of the region, while also supporting rural livelihoods, providing raw materials for construction and packaging, and generating substantial downstream linkages to other industries (Poudel and Dahal 2025; Lamsal et al. 2025a). The scale and diversity of activities across the FPI underscore its role as a major part of the broader manufacturing economy, contributing to value added and sustaining consumer demand (Lamsal et al. 2025b).

A state report on FPI contributions on Vermont was previously published by Leefers et al. (2020) using 2017 IMPLAN data. The present update extends that effort using 2023 data, allowing for a comparison across time. This analysis measures how the performance of forest sector industries in Vermont has shifted between 2017 and 2023 in terms of employment, output, labor income, and the Gross State Product (GSP), also known as value added². Tracking these changes is essential, as it provides a clear picture of both long-term trends and the more recent disruptions caused by the COVID-19 pandemic. The pandemic had economy-wide effects on supply chains, consumer demand, and labor markets (Poudel and Dahal 2025; Lamsal et al. 2025b), and this report therefore captures the pre- and post-COVID conditions of the FPI within the region.

This trend analysis can be used in multiple ways by related stakeholders. For policymakers, it offers a benchmark for monitoring the health of one of the region’s key resource-based industries and helps inform workforce development, investment, and rural economic policies. For industry stakeholders, it provides insight into productivity, competitiveness, and sectoral resilience, supporting strategic planning. For researchers and forest managers, it offers a consistent regional framework that connects forest resources with industrial performance and economic outcomes.

² The 2017 results in this report are based on data from the IMPLAN Pro desktop version, whereas the 2018–2023 results are based on the IMPLAN web platform. Because there are minor differences between the Pro and web versions, the 2017 estimates shown here may not exactly match 2017 results reproduced from the web version. To maintain consistency with the original 2017 report and ensure a valid basis for comparison and trend analysis, we use the original 2017 IMPLAN Pro data, and IMPLAN web data for all years from 2018 through 2023.

The inventory data used in this report were sourced from the U.S. Forest Service Forest Inventory and Analysis (FIA) database and the economic data were obtained from Impact Analysis for Planning (IMPLAN). These data and related information are presented in four major sections: (i) Forest Resources of Vermont, (ii) Economic Contributions of the Vermont FPIs, (iii) Comparing FPIs with other industries and neighbor states, and (iv) Summary. We acknowledge that, due to rounding, some values in the tables and figures may not sum to the exact total indicated.

Forest Resources of Vermont state

According to the 2023 USDA Forest Inventory and Analysis (FIA) estimates, Vermont contains approximately 5.91 million acres of total land area. Of this total, 4.49 million acres are classified as forest land, representing 76 percent of the state's land base. Forest land includes three FIA categories: timberland, reserved forestland, and other forestland. Timberland, the portion suitable and available for commercial wood production, accounts for 4,267,975 acres, or 95.0 percent of all forest land. Reserved forestland, which is withdrawn from timber harvesting through legal or administrative designation, encompasses 219,366 acres (4.9 percent). The remaining 4,896 acres fall under "other forestland," defined as unreserved forest with low productivity, generally yielding less than 20 cubic feet per acre per year. The state contains 1,420,780 acres (24 percent) of non-forest land, including agricultural areas, developed land, water, and other non-treed landscapes. Overall, Vermont remains one of the most heavily forested states in the nation, with nearly three-quarters of its land base covered by forests suitable for timber production.

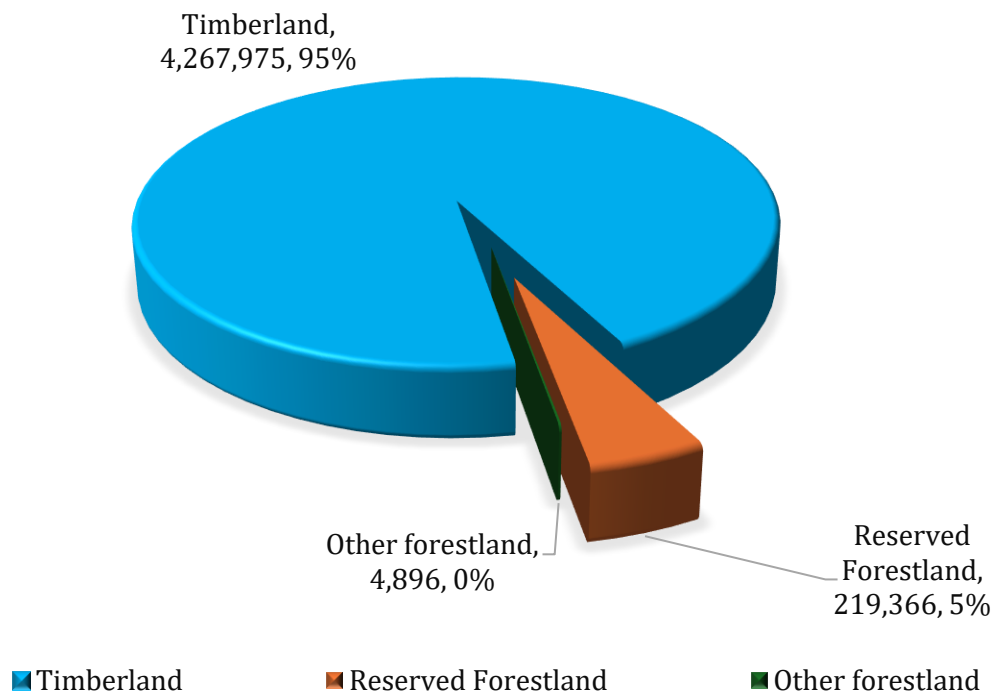


Figure 1: Vermont Forest Land area in acres by Land use type, 2023 (US Forest Service).

Ownership of Vermont’s 4.49 million acres of forest land is distributed across federal, state, local, and private holders, with private landowners controlling the dominant share. Private ownership accounts for 3,591,911 acres, or 80.0 percent of all forest land in the state. Public entities collectively manage the remaining 20 percent. The Green Mountain National Forest represents the largest public forest holding, with 408,360 acres (9.1 percent). Other federal agencies own 53,383 acres (1.2 percent). State and local governments manage 438,582 acres, or 9.8 percent of Vermont’s forest land. This ownership pattern reflects Vermont’s long-standing tradition of private land stewardship, complemented by substantial federal and state forest holdings that support recreation, conservation, wildlife habitat, and sustainable timber management.

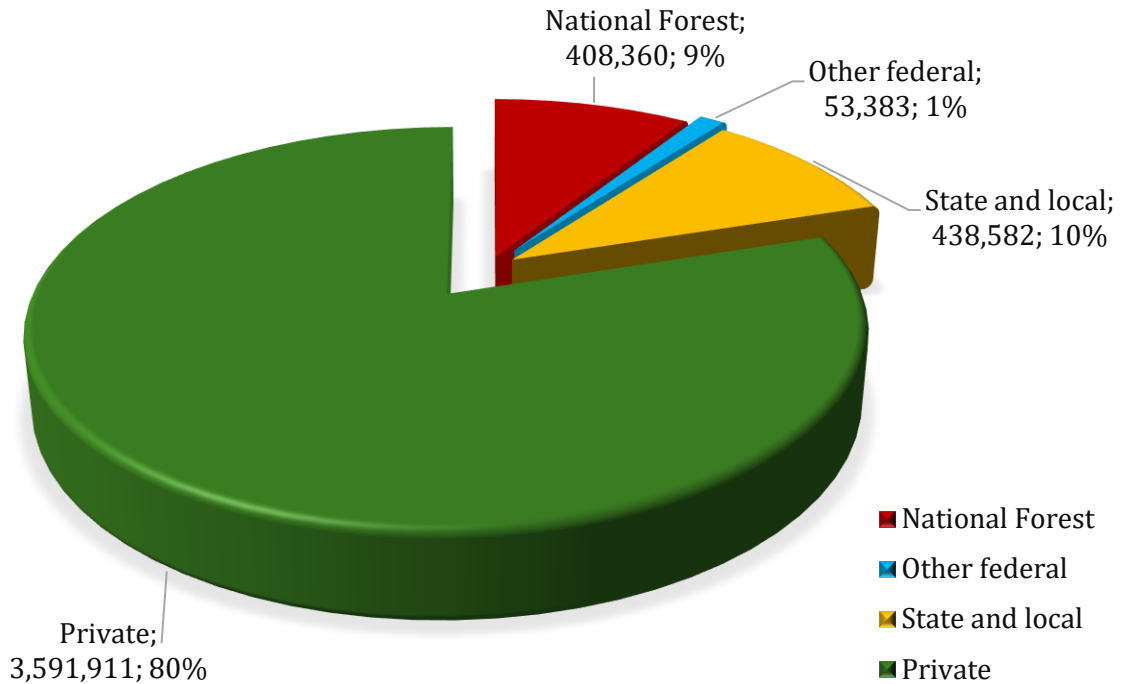


Figure 2: Vermont Forest Land area in acres by Ownership group, 2023 (US Forest Service).

Vermont’s forests are strongly dominated by northern hardwoods. The maple/beech/birch forest-type group is by far the most extensive, covering 3.19 million acres, or 71 percent of the state’s forest land (Figure 3). Conifer and mixed conifer–hardwood types occupy smaller but important areas: white/red/jack pine accounts for 390,118 acres (9 percent) and spruce/fir for 297,429 acres (7 percent). Additional hardwood-dominated types include aspen/birch with 184,417 acres (4 percent) and oak/hickory with 150,515 acres (3 percent). The remaining 275,231 acres (6 percent) fall into other mixed or less common forest-type groups. Taken together, hardwood-dominated types, primarily maple/beech/birch, aspen/birch, oak/hickory, and much of the “other” group, represent roughly four-fifths of Vermont’s forest land, while conifer-dominated spruce/fir and white/red/jack pine account for about one-sixth, highlighting the state’s reputation as a northern hardwood landscape.

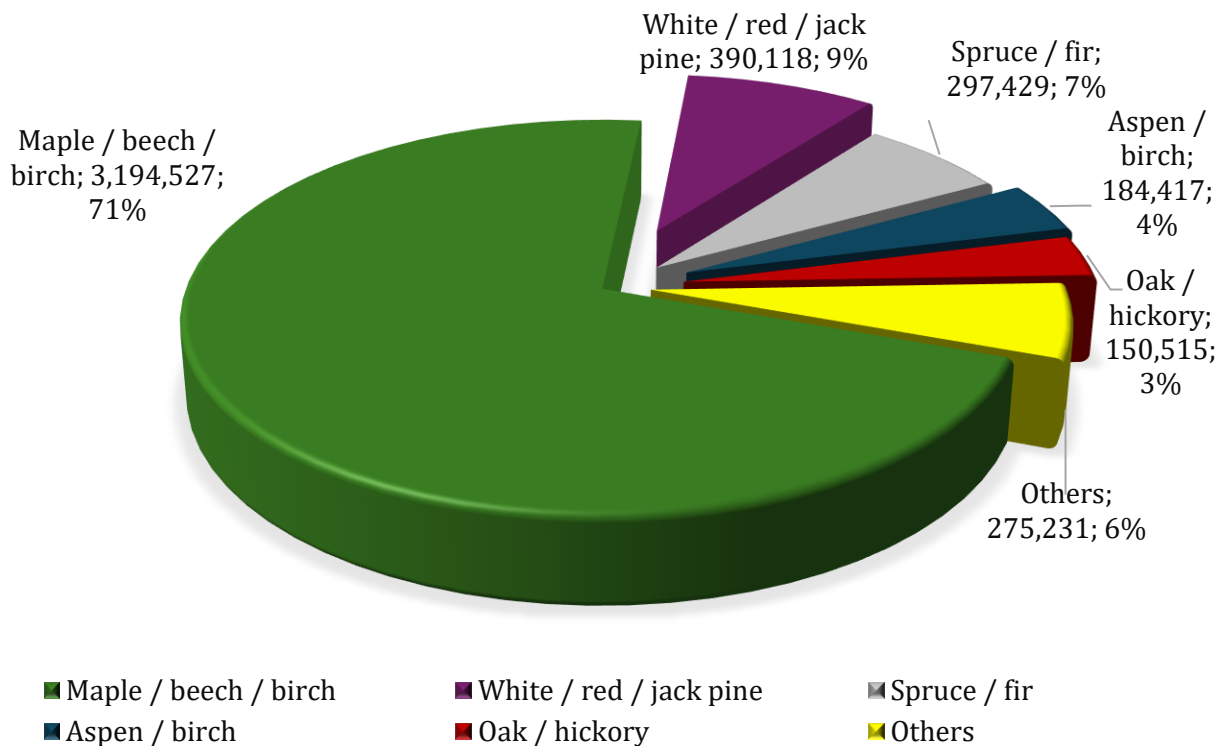


Figure 3: Vermont Forest Land area in acres by Forest type group, 2023 (US Forest Service).

Vermont's timber resources support an active mix of hardwood and softwood industries, including maple products, sawmills, and paper/paperboard and wood-products manufacturing. The state's forests contain an estimated 10.98 billion cubic feet of net growing-stock volume (Table 1), equivalent to roughly 138 million standard cords. Of this total, hardwoods account for 7.42 billion cubic feet (about 68 percent), and softwoods for 3.56 billion cubic feet (about 32 percent). Most of the growing stock is on private lands, which hold 8.77 billion cubic feet, or about 80 percent of the total. The Green Mountain National Forest and other federal lands together contain about 1.14 billion cubic feet (roughly 10 percent), while state and local lands hold another 1.07 billion cubic feet (about 10 percent).

Average annual net growth totals 170.2 million cubic feet per year, while average annual harvest removals total 57.1 million cubic feet and average annual mortality totals 79.4 million cubic feet per year. Net growth exceeds harvest removals by a ratio of about 3.0 to 1, indicating that removals remain well below net biological growth statewide. Because net growth is already net of mortality, the implied annual net change in growing-stock volume is net growth minus harvest removals, or approximately 113.1 million cubic feet per year. This positive balance indicates continued expansion of growing stock volume at the statewide level. Average annual harvest removals equal roughly 0.5 percent of standing volume, or about 0.7 million standard cords, while mortality represents about 0.7 percent of standing volume. Hardwoods account for the majority of annual inventory flows, comprising 68.0 percent of net growth, 56.1 percent of

harvest removals, and 56.2 percent of mortality. Harvest removals are concentrated heavily on private lands, which account for about 96.6 percent of total removals. Overall, these statewide indicators suggest that Vermont's growing stock inventory remains in a condition of positive net growth.

Table 1: Characteristics of Growing Stock in Vermont, 2023. [†]

Description	Species group	National Forest	Other federal	State and local	Private	Not available	Total
Net volume	Hardwood	766,316	101,936	812,347	5,744,358	0	7,424,958
	Softwood	225,112	49,625	253,810	3,029,687	0	3,558,234
	Total	991,429	151,561	1,066,157	8,774,045	0	10,983,192
Average annual net growth	Hardwood	8,440	930	8,948	96,964	376	115,658
	Softwood	2,695	570	3,884	46,894	475	54,518
	Total	11,134	1,500	12,833	143,858	851	170,176
Average annual harvest removals	Hardwood	706	84	1,071	30,184	0	32,045
	Softwood	40	0	37	24,980	0	25,057
	Total	746	84	1,107	55,164	0	57,101
Average annual mortality	Hardwood	4,899	827	5,714	33,204	0	44,645
	Softwood	2,861	129	1,833	29,961	0	34,784
	Total	7,760	956	7,548	63,166	0	79,429

[†] All amounts are in thousands of cubic feet.

Note: **Growing stock** is all live trees of commercial species that meet minimum merchantability standards. **Net volume** is net volume in cubic feet of growing stock for timber species, for trees greater than or equal to five inches in diameter, from a one-foot stump to a minimum four-inch top diameter, or to where the central stem breaks into limbs, all of which are less than four inches in diameter. **Net growth** is the average annual net growth of growing stock, in cubic feet, on forest land. **Annual mortality** is the average annual cubic foot mortality of live growing-stock trees (at least four inches DBH), in cubic feet, on forest land. **Harvest removals** are the average annual harvest removals, in cubic feet, of growing stock trees on forest land.

Economic contribution of the Forest Product Industries, 2023

The FPIs in this study are defined as 32 IMPLAN industries that were aggregated into seven analytic groups for consistent reporting across the state. This report follows the same industry grouping framework used in the 2017 report, which was originally developed through consultation with state forestry agencies and other stakeholders and represents a working consensus on what constitutes the regional FPI (Leefers et al. 2020; Poudel and Dahal 2025). The complete list of industries and groupings are presented in [Appendix A](#).

The FPI encompasses a wide range of activities that begin with forest management and timber harvesting and extend through the conversion of raw materials into high-value finished goods. These activities include timber tract operations, nurseries, logging, sawmills, wood preservation, pulp and paper manufacturing, furniture production, and related downstream sectors (Poudel and Dahal 2025). The FPI is a cornerstone of the Vermont economy, not only providing direct employment in logging, milling, and manufacturing but also supporting a much larger network of indirect and induced jobs in transportation, warehousing, wholesale trade, and retail (Leefers et al. 2020). Its health has far-reaching consequences for rural communities, where it is often one of the few sources of year-round employment, and for regional supply chains that depend on steady flows of wood, fiber, and paper products (Lamsal et al. 2025a).

Measuring these contributions requires more than simply counting jobs, mills, or other establishments. Contribution analysis is essentially a descriptive, ex-post accounting framework that traces how industries interact within a regional economy and support the economy (Lamsal et al. 2025b, Watson et al. 2015). It not only measures the direct transactions tied to a sector, but also the indirect effects in supplier industries and the induced effects from household spending that ripple outward. Economic contribution analysis depends on standardized frameworks that can translate government statistics into regional input–output models. The Bureau of Economic Analysis (BEA) provides the foundation through its Benchmark Input-Output Accounts, which map the flow of goods and services across industries and establish the structure of GDP by industry (BEA 2023). The Bureau of Labor Statistics (BLS) complements this with the Quarterly Census of Employment and Wages (QCEW) and occupational data, which provide details on employment and payroll. Further, the U.S. Census Bureau adds extra detail with the Economic Census and County Business Patterns, which track establishments, receipts, and industry-level production. IMPLAN harmonizes these data sources into a consistent input-output modeling framework for estimating regional economic contributions (IMPLAN 2023). IMPLAN is widely used in forest-sector economic research to estimate employment, output, labor income, and value-added effects associated with forest-products industries. Several forest-

sector studies have also paired IMPLAN with FIA data to link forest resource conditions with regional economic outcomes, including timber-product output in Ohio (Coronado et al. 2014), domestic hardwood substitution for imported trailer decking in New York (Pokharel et al. 2023), and potential mass timber processing facility development in Michigan (Khanal et al. 2024). IMPLAN also provides a bridge table that is important for defining the forest-products sectors included in this report. The bridge table is useful in both directions: it aggregates NAICS industries into IMPLAN sectors for modeling and identifies the NAICS components represented within each IMPLAN sector. Although this does not by itself constitute a formal sector disaggregation within IMPLAN, it provides the basis for constructing partial-sector estimates when external data are available.

This distinction is particularly important for forest sector analysis because several IMPLAN sectors contain both forestry and non-forestry components (Poudel and Dahal 2025). In this study, the IMPLAN bridge table was used to identify the relevant NAICS-defined activities embedded within broader IMPLAN sectors, and external data were then used to approximate the forest-related share of selected mixed sectors. For example, IMPLAN Sector 10 (All Other Crop Farming) includes a wide variety of agricultural activities such as alfalfa, peanut, and hemp farming, also in addition to maple syrup production. Using USDA maple syrup production data, only the maple syrup portion of Sector 10 was included in the FPI. Similarly, IMPLAN Sector 19 (Support Activities for Agriculture and Forestry) encompasses a broad spectrum of NAICS industries, including soil preparation, crop harvesting, farm labor contracting, and specialized support services for forestry. To avoid overstating the sector, only Support Activities for Forestry were retained in the FPI totals, using BLS employment and establishment data. Thus, the partial-sector estimates reported here reflect analyst-defined allocations based on the IMPLAN bridge table and supplementary data, rather than an automatic sector split performed within IMPLAN. In the 2017 report, several additional sectors were treated as partial sectors, IMPLAN 40 (Electric Power Generation, Biomass), IMPLAN 352 (Institutional Furniture Manufacturing), and IMPLAN 356 (Showcase, Partition, Shelving, and Locker Manufacturing), but in 2023, following stakeholder consensus and due to limited data to isolate wood-based components, these are treated as full sectors; consequently, the 2023 economic contribution estimates for these specific sectors appear higher and are not directly comparable to the 2017 figures. Any comparison between years should therefore be interpreted with caution.

Further, the 2023 analysis implemented the mixed endogenous-exogenous closure using the Output- and Employment -based multipliers formulation approach (Miller and Blair 2022; Lamsal et al. 2025a), whereas the 2017 report used the equivalent matrix-inversion approach. Since these approaches are alternative computational expressions of the same input–output framework and, under the same closure assumptions, these formulations are theoretically equivalent and yield the same multipliers and results.

Note on Data Consistency (2017 vs. 2018–2023): Readers should interpret the sharp variance between 2017 and 2018 data with caution. The 2017 figures presented in this report are retained from previous studies that used the desktop-based IMPLAN Pro software. Data for 2018 through 2023 were generated using the modernized IMPLAN Cloud (Web) platform, which utilizes updated accounting frameworks and regional purchase coefficients. Although both sets of estimates are based on the same underlying input–output/SAM framework, they are not fully comparable in construction. IMPLAN revised its industry classification structure over time, moving from the 536-industry scheme used for 2013–2017 data years to the 546-industry scheme used for 2018–2022, and later to the 528-industry scheme beginning in 2023. IMPLAN also documents differences in trade-flow and regional purchase coefficient estimation between legacy Pro-era workflows and the current cloud environment. In addition, this report applies updated aggregation and sector-inclusion rules for selected forest-related industries. Accordingly, differences between 2017 and later years may reflect methodological discontinuity in addition to underlying economic change. Comparisons spanning 2017 to 2018 should therefore be interpreted with caution.

Economic Performance Trends of Forest Product Industry (2017-2023)

Figure 4 illustrates the structural adjustments and economic trends within the Forest Sector over the seven-year study period. The data shows a contraction in the sector’s workforce, with total direct employment declining by approximately 15.4% (a loss of 1,407 jobs), falling from 9,107 in 2017 to 7,700 in 2023. Direct Industry Output followed a similar but less severe downward trajectory, decreasing by 9.3% from \$1,718 million to \$1,558 million. This divergence between the sharper decline in employment and the more moderate reduction in output suggests a period of industry consolidation and increased labor efficiency. While the workforce has shrunk, the sector has maintained a relatively higher level of production capacity per worker, indicating that technical advancements or operational efficiencies are helping to mitigate the impacts of labor reductions. Notably, while output dipped to a low of \$1,554 million in 2022, it stabilized and showed a slight increase in 2023, even as employment figures continued to adjust downward.

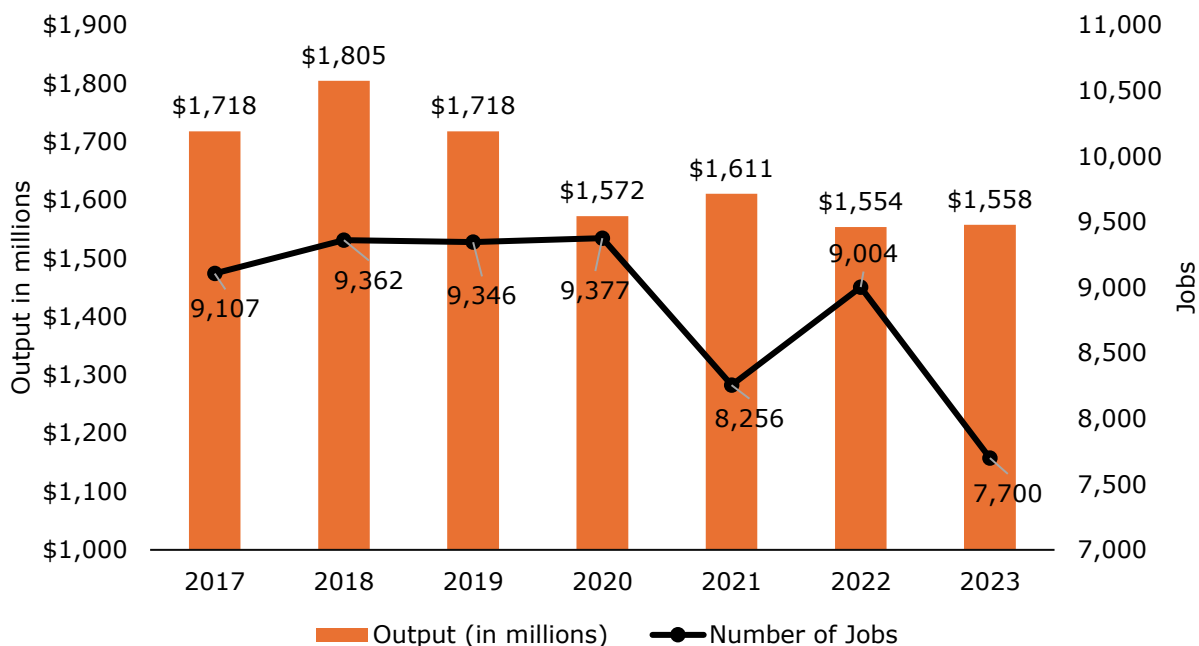


Figure 4: Direct output and employment, 2017–2023, Vermont state forest products industries.

Figure 5 provides further context on the economic quality and contribution of the forest products industries to the state economy. Value Added, which measures the sector’s contribution to Gross State Product, displayed some volatility over the study period; notably, it peaked at \$490 million in 2022 before contracting to \$432 million in 2023, representing an overall decrease of 10.2% since 2017.

However, a crucial structural shift is evident when analyzing Labor Income in relation to the employment trends discussed in Figure 4. While the workforce contracted by approximately 15.4% over the seven-year period, total Labor Income declined at a more moderate rate of 11.8% (falling from \$356 million to \$314 million). Consequently, the average labor income per worker rose by 4.3%, increasing from approximately \$39,100 in 2017 to \$40,800 in 2023. This trend indicates that while the Vermont Forest Sector has become smaller in terms of headcount and total value added, the remaining employment positions represent a slightly higher average value, reflecting a shift toward a more efficient or higher-skilled workforce composition.

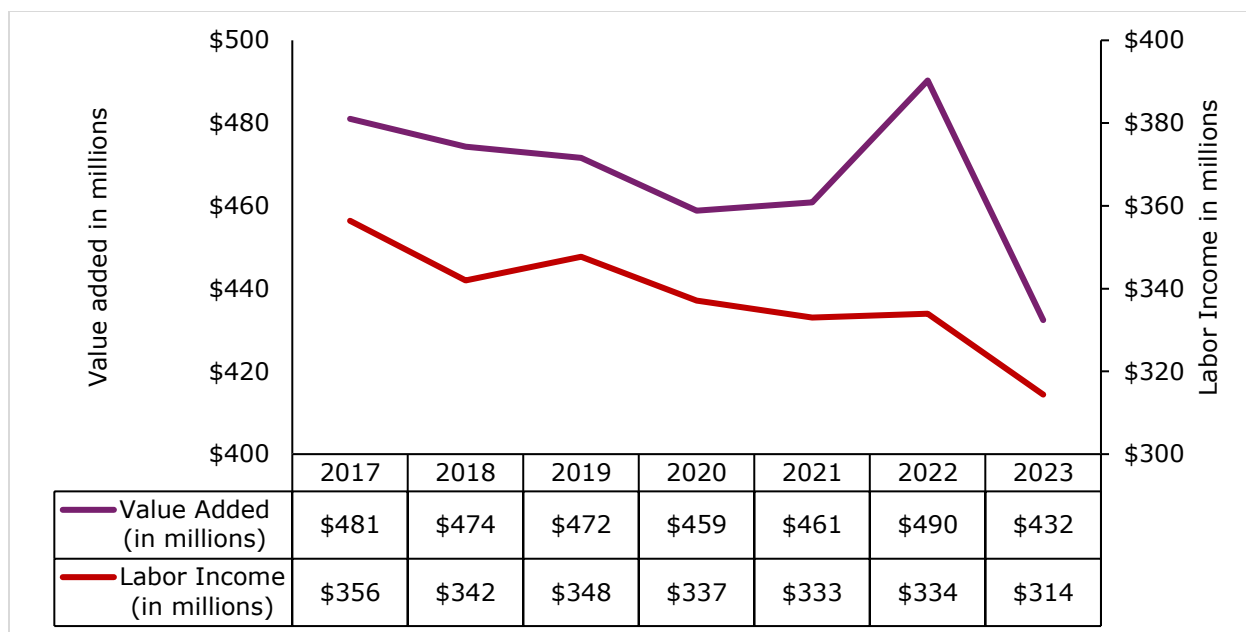


Figure 5: Direct value-added and labor income, 2017–2023, Vermont state, forest products industries.

Direct and Total Contributions by Forest Product Industry Groups

In 2023, Vermont’s forest products industries directly employed 7,700 individuals, generated approximately \$1.56 billion in output, and contributed \$432 million in value-added to the state economy (Table 2). However, the sector’s influence extends well beyond these direct operations. When accounting for indirect supply-chain purchases and induced household spending, the sector’s total economic contribution reached 11,409 jobs and \$2.33 billion in total output.

Table 2: Statewide Economic Contribution of Forest Products Industries, 2023.[†]

	Employment	Labor Income	Value-added	Output
Direct in 2023	7,700	\$314,390	\$432,398	\$1,557,872
Compared to 2017	-15.4%	-11.8%	-10.1%	-9.3%
Total in 2023	11,409	\$558,776	\$861,956	\$2,328,279
Compared to 2017	-17.4%	-12.4%	-8.5%	-9.7%
Multipliers in 2023	1.48	1.78	1.99	1.49

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Comparing these results with 2017 values reveals that the wider economic footprint is contracting at a slightly faster rate than the direct industry, particularly regarding employment. While direct employment declined by 15.4% from 2017 to 2023, the total employment impact

fell by 17.4%. This trend suggests that efficiency gains or consolidations within the forest sector are having an amplified downward effect on the supporting industries and local service sectors that rely on forest-related spending. Conversely, the decline in Total Value-Added (-8.5%) was less severe than the decline in Direct Value-Added (-10.1%), indicating that while the support network is shrinking in headcount, the remaining supply chain interactions retain strong economic value.

The calculated multipliers highlight the sector's integration into the broader state economy. The employment multiplier of 1.48 indicates that for every 100 direct jobs in the forest industry, roughly 48 additional jobs are supported elsewhere in the Vermont economy. Furthermore, the Value-Added multiplier of 1.99 suggests that the sector generates nearly as much economic value in the wider supply chain as it does directly, effectively doubling its contribution to the Gross State Product.

Table 3 reports the direct economic contributions of the seven industry groups, while Table 4 presents their total contributions. In 2023, the Forestry industry accounted for the largest share of direct employment, supporting 2,941 jobs. This high employment figure is largely driven by the Maple Syrup production (2,333 jobs) and support activities for forestry (523 jobs). Wood Furniture followed as the second-largest employer (1,203 jobs), with Logging in third (1,145 jobs).

Table 3: Direct Economic Contributions in Vermont state, Industry Groups, 2023. [†]

Industries	Employment	Labor Income	Value-Added	Output
1.Forestry	2,941	\$49,442	\$60,396	\$99,313
2.Logging	1,145	\$34,278	\$42,503	\$47,195
3.Primary Solid Wood Products	818	\$47,007	\$76,678	\$387,082
4.Secondary Solid Wood Products	960	\$55,470	\$79,229	\$288,208
5.Wood Furniture	1,203	\$67,980	\$73,892	\$231,041
6.Paper and Paperboard mills	581	\$56,188	\$94,174	\$478,672
7.Secondary Paperboard and other Paper Products	53	\$4,024	\$5,526	\$26,361

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

In terms of financial impact, however, Paper, and Paperboard Mills was the dominant industry, generating the highest direct output (\$478.7 million) and value-added (\$94.2 million). This stark contrast highlights the structural differences within the sector: the paper and paperboard manufacturing industry is highly capital-intensive, generating significant value with a smaller workforce (581 jobs), whereas the Forestry and Logging sectors are labor-intensive. Notably, while Forestry provided the most jobs, it generated significantly lower output (\$99.3 million) compared to the manufacturing groups.

When supply-chain and induced effects are included (Table 4), the rankings shift due to inter-industry linkages. Forestry remained the largest contributor to total employment (3,224 jobs), but the Primary Solid Wood Products sector demonstrated the strongest multiplier effects. Employment in Primary Solid Wood Products roughly tripled from 818 direct jobs to a total contribution of 2,470 jobs, indicating deep integration with local suppliers and service sectors. In terms of total financial contribution, Paper, and Paperboard Mills remained the economic driver, responsible for the highest total output (\$765.5 million) and total value-added (\$244.4 million).

Table 4: Total Economic Contributions in Vermont state, Industry Groups, 2023. [†]

Industries	Employment	Labor Income	Value- Added	Output
1.Forestry	3,224	\$66,744	\$93,042	\$154,929
2.Logging	1,377	\$44,997	\$61,489	\$77,011
3.Primary Solid Wood Products	2,470	\$131,370	\$213,098	\$618,113
4.Secondary Solid Wood Products	1,883	\$109,983	\$171,028	\$469,539
5.Wood Furniture	1,914	\$112,512	\$152,184	\$373,586
6.Paper, and Paperboard mills	1,976	\$144,036	\$244,370	\$765,524
7.Secondary Paperboard and other Paper Products	109	\$7,696	\$55,585	\$38,181

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Taken together, the data illustrates a distinct bifurcation in Vermont's forest economy. The combined manufacturing sectors (Paper, Solid Wood, and Furniture) drive the majority of the industrial output, with the paper sectors alone (Paper, and Paperboard Mills plus Secondary Paperboard) accounting for 32.4% of the sector's total direct output (\$505 million). Meanwhile, the land-based sectors (Forestry and Logging) are crucial for maintaining employment levels, accounting for 53.1% of all direct forest sector jobs (4,086 jobs). This underscores that while the

manufacturing arm provides the largest contribution to the state's Gross State Product, the Forestry sector, including activities such as Maple Syrup production, is the primary driver of rural employment.

Note: In Table 4, readers may observe that the sum of the economic contributions for the individual industries exceeds the reported total contribution for the Forest Sector as a whole as presented in Table 2. This difference is intentional and results from the "mixed-model" approach used to ensure accuracy. In Input-Output (I-O) analysis, simply adding the total contributions of individual sectors results in double-counting. This occurs because the output of one forest industry often serves as an input for another. For example, logs harvested by the Logging sector are inputs for the Furniture sector. If modeled individually and summed, the model counts both the direct value of the logs and the associated supply-chain ripples (indirect effects) twice: once as a production requirement for the Furniture, and again as a direct output of the Logging sector. To provide the most accurate estimate, the aggregated total is calculated by treating the forest industries as a single economic unit. This method mathematically nets out all inter-industry transactions within the sector, ensuring that the final results reflect only the new economic value generated for the state economy

Forestry

Economic Contribution of Forestry.

Table 5 presents the economic contribution of the Forestry sector. The forestry group includes three industries: (1) timber tract operations, which involve managing forest lands primarily for the sale of standing timber; (2) maple sap production and syrup production associated with primary maple operations (classified under all other crop farming); and (3) Support activities for forestry³. Firms providing support activities may handle boundary marking, pest and fire control, timber cruising, wildland firefighting, and consulting on forest management or reforestation.

Table 5: Direct, Indirect, and Induced Economic Contributions of the Forestry Industry in Vermont, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	2,941	\$49,442	\$60,396	\$99,313
Indirect	61	\$4,531	\$8,447	\$17,065
Induced	222	\$12,772	\$24,199	\$38,551
Total	3,224	\$66,744	\$93,042	\$154,929

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

In 2023, the sector directly supported 2,941 jobs and generated \$99.3 million in direct output. As noted in the sector comparison, Forestry is the largest employer in the Vermont forest products value chain, largely due to the labor-intensive nature of maple syrup production and forest support services. However, despite high employment, the output per worker is lower than in the manufacturing sectors. The sector exhibits a distinct economic profile characterized by low intermediate consumption but steady household-spending impacts. The employment multiplier of 1.10 is relatively low and indicates that for every 100 jobs in Forestry, roughly 10 additional jobs are supported elsewhere in the state economy.

Notably, the Induced effects (driven by worker household spending) substantially outweigh the Indirect effects (driven by business-to-business supply chain purchases).

- **Indirect Effect:** Only 61 jobs and \$17.1 million in output. This reflects the nature of timber growing and maple syrup production; these activities are land-intensive rather than supply-chain intensive, requiring fewer daily inputs from other industries compared to a sawmill or paper mill.

³ The economic contribution of the forestry industry, excluding maple syrup, is presented in [Appendix C](#).

- **Induced Effect:** 222 jobs and \$38.6 million in output. This suggests that the primary economic ripple of this sector comes from the income spent by its workforce in the local economy rather than the operational purchases of the businesses themselves.

When these effects are combined, the Forestry industry contributed a total of 3,224 jobs, \$154.9 million in output, and \$93.0 million in value-added to the Vermont economy in 2023. The total output multiplier of 1.56 implies that every \$100 of output produced by the forestry sector generates an additional \$56 of economic activity throughout the state.

Trend Analysis: Forestry (2017–2023)

As illustrated in Figure 6, the Forestry industry exhibits substantial year-over-year volatility driven by biological cycles and weather conditions. After reaching a period high of \$127.2 million in direct output and 4,000 jobs in 2022, the sector experienced a sharp contraction in 2023. Between 2022 and 2023, direct output fell by 21.9% (from \$127.2 million to \$99.3 million), while direct employment declined by 26.5% (a loss of 1,059 jobs).

A primary driver of this 2023 decline was a significant drop in maple syrup production, a dominant component of the Forestry sub-sector in Vermont. According to the USDA National Agricultural Statistics Service (NASS, 2023), Vermont's maple syrup production totaled 2.05 million gallons in 2023, a decrease of 20% from the record-breaking production observed in the previous year. This reduction was largely attributed to unfavorable weather conditions, which caused the yield per tap to fall from 0.384 gallons in 2022 to 0.322 gallons in 2023. Consequently, the inflation-adjusted value of maple production decreased from approximately \$111.5 million in 2022 to \$79.8 million in 2023. Because maple syrup production accounts for a substantial portion of Vermont's agricultural forestry output, this singular biological shock had a disproportionately large impact on the industry's topline performance for the year.

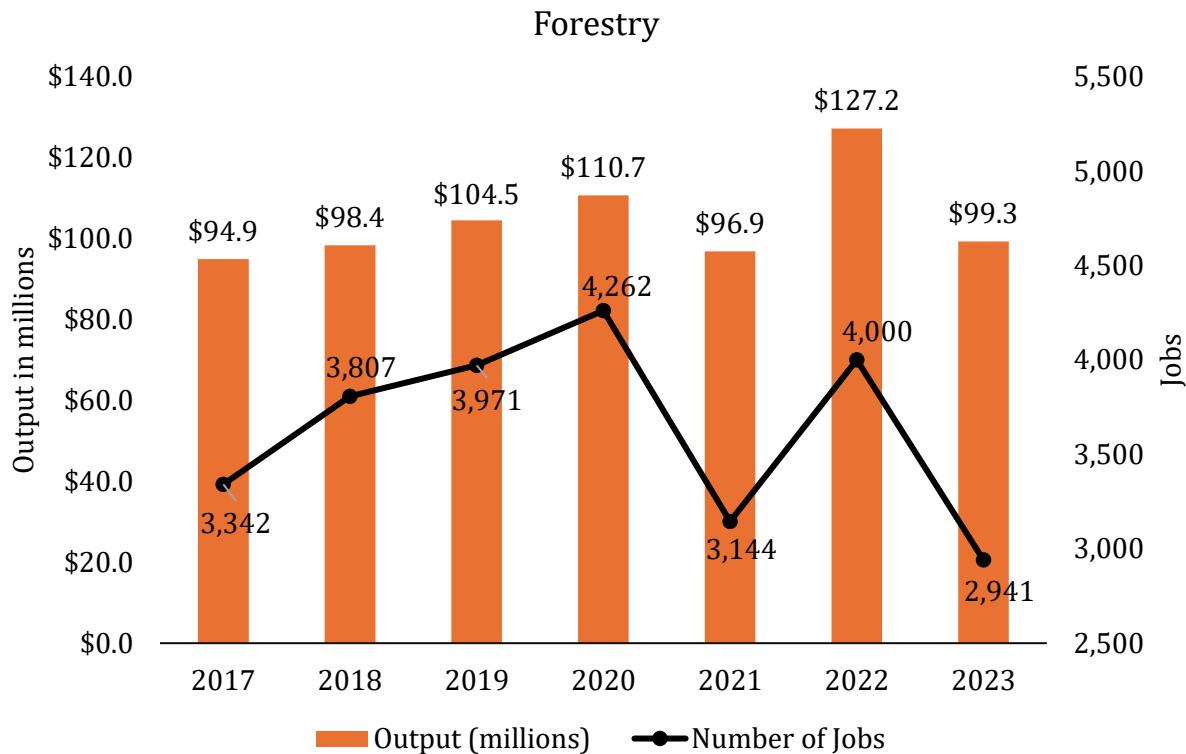


Figure 6: Trend in direct employment and output for the Forestry industry in Vermont, 2017–2023.

Logging

Economic Contribution of Logging

The commercial logging sector consists of establishments primarily engaged in cutting timber, transporting logs, and producing chips in the field. Table 6 outlines the economic contributions of the Logging sector. In 2023, Logging supported 1,145 direct jobs, making it the third-largest employer within Vermont's forest sector (following Forestry and Wood Furniture). The sector generated \$47.2 million in direct industry output and \$42.5 million in Value-Added.

The multipliers for Logging reveal an industry that is highly labor-intensive with significant downstream impacts on local communities. The sector demonstrates a powerful link between industry activity and household spending. The Induced effects generated \$26.4 million in output, which is nearly eight times larger than the Indirect effects (\$3.4 million). This disparity is driven by the sector's cost structure: a substantial portion of Logging's direct output flows directly into Labor Income (\$34.3 million out of \$47.2 million in output, or roughly 72.6%). Because a high percentage of revenue is paid out as wages, benefits, and salaries (also including the proprietor income) to workers who typically live locally, the re-spending of those wages creates a substantial "induced" ripple throughout the state economy.

Similar to the Forestry sector, Logging has a relatively small supply chain footprint (\$3.4 million in indirect output). This reflects the nature of the business, where major inputs are primarily fuel, equipment, and stumpage, rather than processed intermediate goods. Consequently, while the sector draws less heavily on other industries for operational inputs, its primary economic contribution is realized through the purchasing power it generates for its workforce.

Table 6: Direct, Indirect, and Induced Economic Contributions of the Forestry Industry in Vermont, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	1,145	\$34,278	\$42,503	\$47,195
Indirect	80	\$1,963	\$2,407	\$3,401
Induced	153	\$8,755	\$16,580	\$26,414
Total	1,377	\$44,997	\$61,489	\$77,011

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Logging (2017–2023)

As detailed in Figure 7, the Logging industry in Vermont has experienced severe structural contraction, characterized by extreme volatility in output and a steady erosion of the workforce. Employment has declined significantly, falling 34.1% from a peak of 1,737 jobs in 2017 to a period low of 1,145 in 2023. Unlike the gradual manufacturing consolidations seen elsewhere in the sector, the logging workforce reduction tracks closely with the vanishing opportunities in the harvest and haulage market.

Most notably, the sector faced a critical downturn in 2023. Direct output dropped by 33.9% year-over-year, falling from \$71.4 million in 2022 to just \$47.2 million in 2023. This acute contraction was driven by a convergence of environmental and market shocks. First, Vermont experienced an exceptionally wet summer and severe flooding in July 2023, which rendered many forests inaccessible for harvesting machinery, drastically reducing operating days and timber volume (Vermont Department of Forests, Parks and Recreation [FPR], 2024). Second, the regional market for low-grade wood (pulpwood) collapsed following the closure of the Pixelle Specialty Solutions mill in Jay, Maine, in early 2023. This closure removed a vital regional outlet for pulpwood, forcing loggers to leave low-grade timber in the woods or sell it into depressed biomass markets. Consequently, the sector's output per worker has crashed, falling from approximately \$65,600 in 2017 to roughly \$41,200 in 2023, reflecting the compounding challenges of weather-restricted operations and shrinking commercial outlets for fiber.

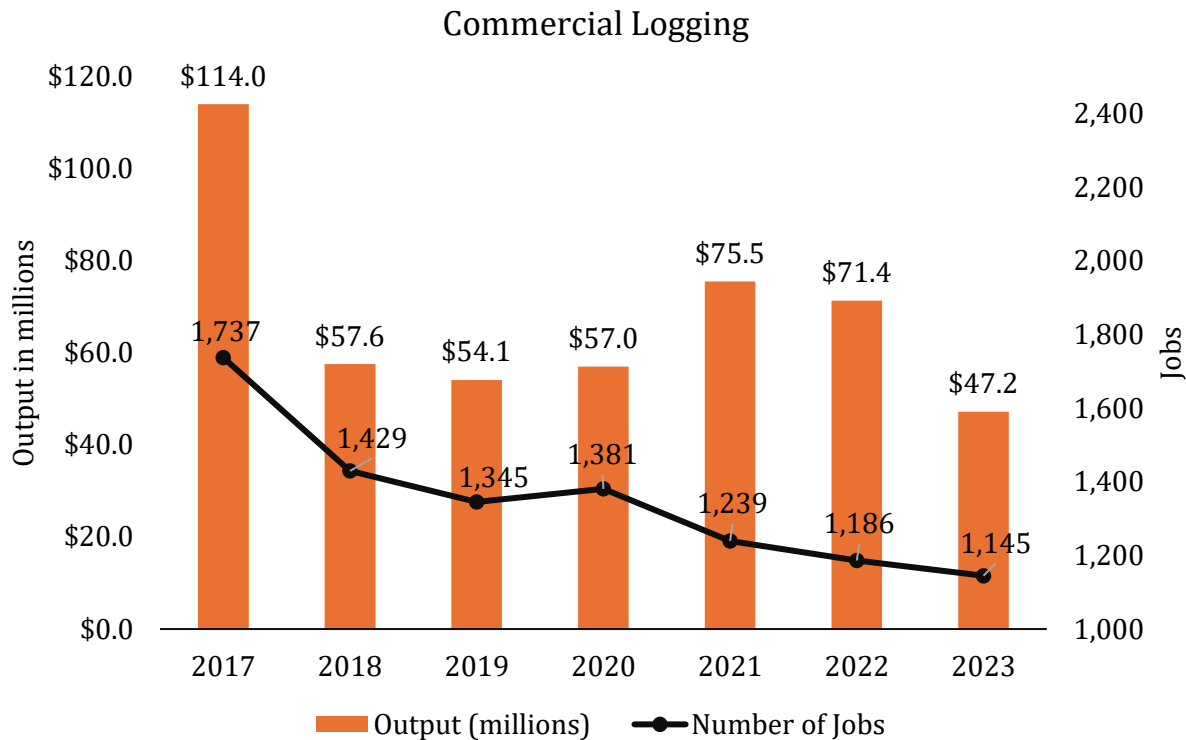


Figure 7: Trend in direct employment and output for the Logging industry in Vermont, 2017–2023.

Primary Solid Wood Products

Economic Contribution of Primary Solid Wood Products

Table 7 outlines the economic contributions of the Primary Solid Wood Products industry. In Vermont, this sector includes electric power generation from biomass, sawmills, wood preservation, and veneer and plywood manufacturing. In 2023, this manufacturing sector directly employed 818 workers and generated \$387.1 million in direct output. While the sector's direct employment is lower than that of Forestry or Logging, it generates substantial downstream value, contributing \$76.7 million in direct Value-Added.

The Primary Solid Wood Products industry exhibits the second largest backward linkages in the entire Vermont forest economy (after Paper and Paperboard Mills), characterized by an exceptionally high employment multiplier. Unlike the Forestry and Logging sector, where induced effects (household spending) were dominant, this sector is driven by supply chain purchases. The Indirect Employment effect supports 1,219 jobs, a figure that is approximately 1.5 times larger than the sector's own direct workforce. This unique structure illustrates that for every job inside a sawmill or processing plant, nearly 1.5 jobs are supported in the supply chain (primarily in logging, trucking, and wholesale sectors).

The implied Employment Multiplier is 3.02 (2,470 Total / 818 Direct). This means that every 100 direct jobs in primary wood manufacturing supports an additional 202 jobs elsewhere in the state economy. This is significantly higher than the multipliers for Forestry (1.10) or Logging (1.20), underscoring this sector's role as a "keystone" industry that anchors the wider forest supply chain.

When aggregating direct, indirect, and induced effects, the Primary Solid Wood Products industry contributed a total of 2,470 jobs, \$618.1 million in output, and \$213.1 million in value-added to the state economy in 2023. By supporting nearly 2,500 jobs statewide, this sector serves as a critical economic engine, converting the state's raw timber resources into substantial intermediate and finished goods.

Table 7: Direct, Indirect, and Induced Economic Contributions of the Primary Solid Wood Products Industry in Vermont, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	818	\$47,007	\$76,678	\$387,082
Indirect	1,219	\$59,515	\$89,340	\$156,043
Induced	432	\$24,848	\$47,079	\$74,988
Total	2,470	\$131,370	\$213,098	\$618,113

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Primary Solid Wood Products (2017–2023)

As illustrated in Figure 8, the Primary Solid Wood Products industry in Vermont has exhibited a trend of consolidation and increased labor efficiency, characterized by a divergence between workforce size and economic output. Vermont has experienced a steady structural decline, falling by 13.1% from a peak of 983 jobs in 2018 to 818 jobs in 2023. However, despite this contraction in headcount, real industry output has demonstrated significant resilience.

Most notably, the sector achieved a robust recovery in 2023. While direct employment dipped slightly (a loss of 9 jobs), direct output surged by 10.9% year-over-year, climbing from \$348.9 million in 2022 to \$387.1 million in 2023. This growth trajectory suggests that Vermont’s sawmills and wood preservation facilities have successfully capitalized on market conditions to maximize the value of their production. Comparing the 2023 results to the 2017 baseline reveals a critical shift in productivity: the sector is now generating slightly higher output (\$387.1 million vs. \$383.5 million) with significantly fewer workers. This decoupling of jobs and output indicates a period of maturation where capital investments and operational efficiencies are driving value generation, allowing the industry to maintain its economic contribution despite a smaller labor footprint.

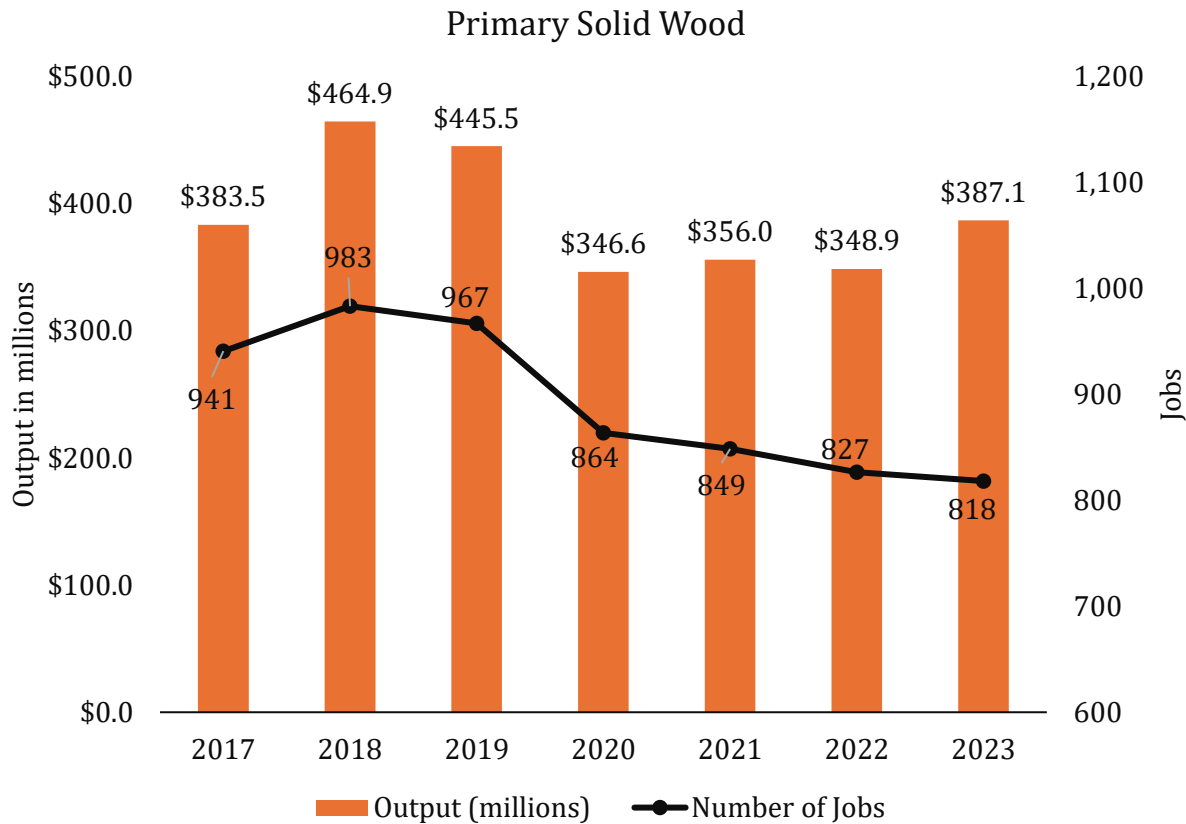


Figure 8: Trend in direct employment and output for the Primary Solid Wood Products industry in Vermont, 2017–2023.

Secondary Solid Wood Products

Economic Contribution of Secondary Solid Wood Products

Table 8 details the economic contribution of the Secondary Solid Wood Products industry. This diverse value-added sector encompasses industries such as engineered wood member and truss manufacturing; wood windows and doors manufacturing; cut stock, resawing lumber, and planing; other millwork, including flooring; wood container and pallet manufacturing; manufactured home production; prefabricated wood building manufacturing; and other miscellaneous wood product manufacturing. In 2023, this sector directly employed 960 workers and generated \$288.2 million in direct output.

The sector exhibits a robust employment multiplier of 1.96, indicating that for every 100 jobs created in secondary manufacturing, approximately 96 additional jobs are supported elsewhere in the Vermont economy. While strong, this multiplier is notably lower than that of the Primary Solid Wood sector (3.02) observed in the previous analysis. This distinction reflects the upstream supply chain dynamics: while Primary manufacturers purchase raw timber from labor-

intensive logging operations, Secondary manufacturers primarily purchase processed lumber from capital-intensive sawmills. Consequently, the Indirect Employment effect (564 jobs), while significant, generates a smaller employment ripple compared to the primary stage relative to the direct workforce size.

When fully aggregated, the sector supports a total of 1,883 jobs and contributes nearly \$469.5 million in total economic output. Financially, the sector acts as an effective value generator, contributing a total of \$171.0 million in Value-Added to the Gross State Product. This reflects the economic lift achieved by transforming rough lumber into high-value finished construction components and consumer goods. This positions the sector as an important downstream component of Vermont’s solid wood value chain.

Table 8: Direct, Indirect, and Induced Economic Contributions of the Secondary Solid Wood Products Industry in Vermont, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	960	\$55,470	\$79,229	\$288,208
Indirect	564	\$33,851	\$52,642	\$118,971
Induced	359	\$20,662	\$39,157	\$62,361
Total	1,883	\$109,983	\$171,028	\$469,539

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Secondary Solid Wood Products (2017–2023)

As illustrated in Figure 9, the Secondary Solid Wood Products industry, which includes manufacturers of wood windows, doors, millwork, and prefabricated buildings, exhibits a performance pattern closely linked to the housing and construction markets. Unlike the extraction sectors, which have faced steady contraction, this value-added sector has demonstrated long-term resilience, maintaining high output levels despite workforce fluctuations. Over the seven-year period, real output expanded by 5.5%, rising from \$273.2 million in 2017 to \$288.2 million in 2023.

The most distinct trend appears in the recent diverge between employment and production. Following a period of stability where employment hovered near 1,075 jobs (2021–2022), the sector experienced a sharp workforce contraction in 2023. Direct employment fell by 10.7% year-over-year to a period low of 960 jobs. However, conversely, industry output rose by 4.6% in 2023, climbing from \$275.6 million to \$288.2 million, the second-highest level in the recorded series, trailing only the 2018 peak (\$290.2 million). This divergence indicates a structural shift toward increased automation and operational efficiency. Vermont manufacturers are effectively generating more value per employee, allowing the sector to expand its economic contribution even as it consolidates its labor requirements.

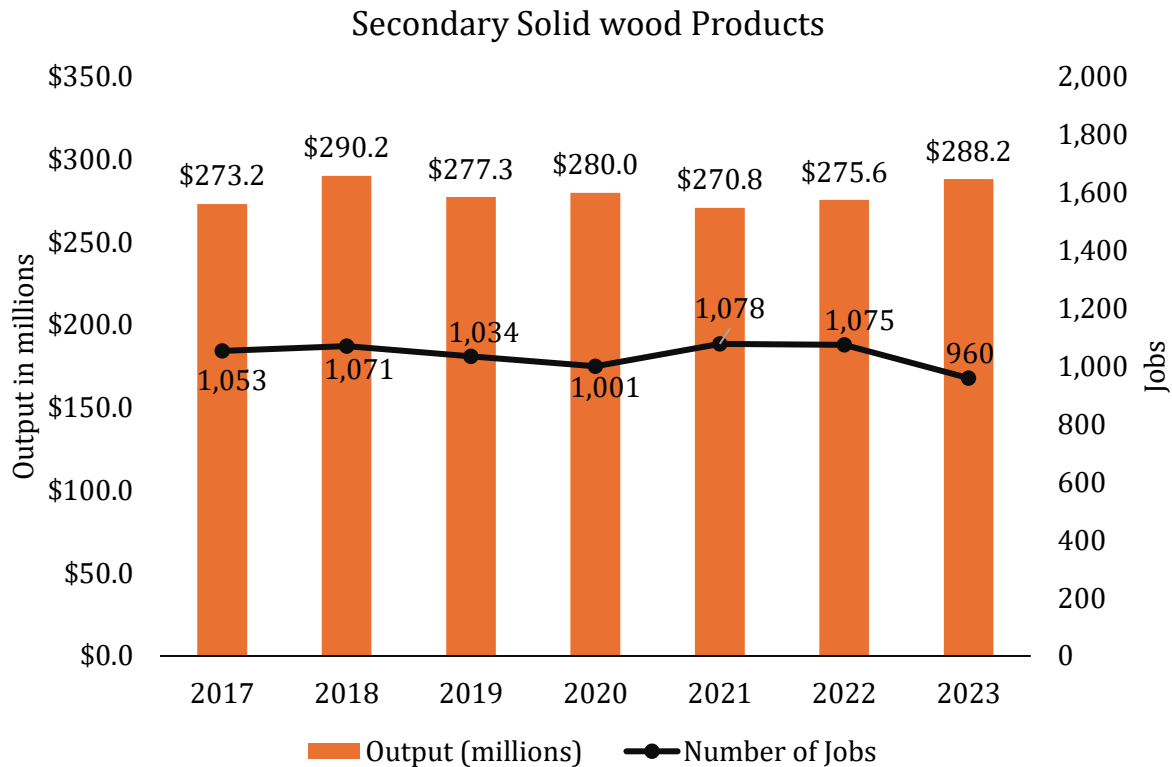


Figure 9: Trend in direct employment and output for the Secondary Solid Wood Products industry in Vermont, 2017–2023.

Wood Furniture

Economic Contribution of the Wood Furniture Industry

The Wood Furniture group includes kitchen cabinet and countertop manufacturing; upholstered and non-upholstered household furniture; institutional and office furniture; custom architectural woodwork; and showcase and partition manufacturing. Table 9 details the economic contribution of this industry. As a consumer-facing sector, it plays a specialized role in Vermont’s forest economy, directly employing 1,203 workers and generating \$231.0 million in direct output in 2023.

The sector exhibits a distinct economic profile with an implied Employment Multiplier of 1.59, indicating that for every 100 jobs in furniture manufacturing, 59 additional jobs are supported elsewhere in the state. A notable structural characteristic is that the Induced effects (367 jobs) slightly exceed the Indirect effects (343 jobs). This suggests that the sector’s economic ripple is driven more by the household spending of its workforce than by its business-to-business supply chain purchases. This balance typically indicates that while the industry adds significant value locally, it likely imports a portion of its non-wood intermediate inputs (more than 45%), such as

hardware, fabrics, and finishing materials, from outside the state, which limits the magnitude of the indirect employment effect relative to the induced impact.

Nevertheless, the sector remains a vital contributor, generating a total economic impact of \$373.6 million and supporting 1,914 total jobs statewide. Financially, the sector contributes \$152.2 million in Total Value-Added, underscoring its role in capturing the final value of wood products before they reach the consumer market.

Table 9: Direct, Indirect, and Induced Economic Contributions of the Wood Furniture Industry in Vermont, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	1,203	\$67,980	\$73,892	\$231,041
Indirect	343	\$23,422	\$38,291	\$78,820
Induced	367	\$21,109	\$40,002	\$63,724
Total	1,914	\$112,512	\$152,184	\$373,586

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Wood Furniture Industry (2017–2023)

As illustrated in Figure 10, the Wood Furniture Industry in Vermont has exhibited significant volatility over the study period, characterized by a distinct peak in 2018 followed by fluctuating cycles of contraction and recovery. After reaching a period high of \$264.9 million in output and 1,348 jobs in 2018, the sector has faced structural headwinds.

Most notably, while 2021 and 2022 showed signs of stabilization near pre-pandemic levels, 2023 marked a renewed downturn for the sector. Between 2022 and 2023, real output contracted by 8.1% (falling from \$251.3 million to \$231.0 million), and direct employment declined by 7.7% (a loss of 101 jobs). This places the sector's performance nearly on par with the lows observed during the year 2020 pandemic (1,206 jobs and \$229.3 million output), suggesting that the post-pandemic recovery momentum has stalled.

Despite this recent contraction, a long-term comparison reveals a trend toward higher value-added manufacturing. While the workforce in 2023 (1,203 jobs) is 8.7% smaller than it was in 2017, the real output remains 6.1% higher than the 2017 starting baseline (\$217.7 million). This divergence indicates that while the sector is consolidating its labor force, the remaining manufacturers are likely shifting toward higher-value custom cabinetry and specialized woodworking, generating more revenue per employee than in previous years.

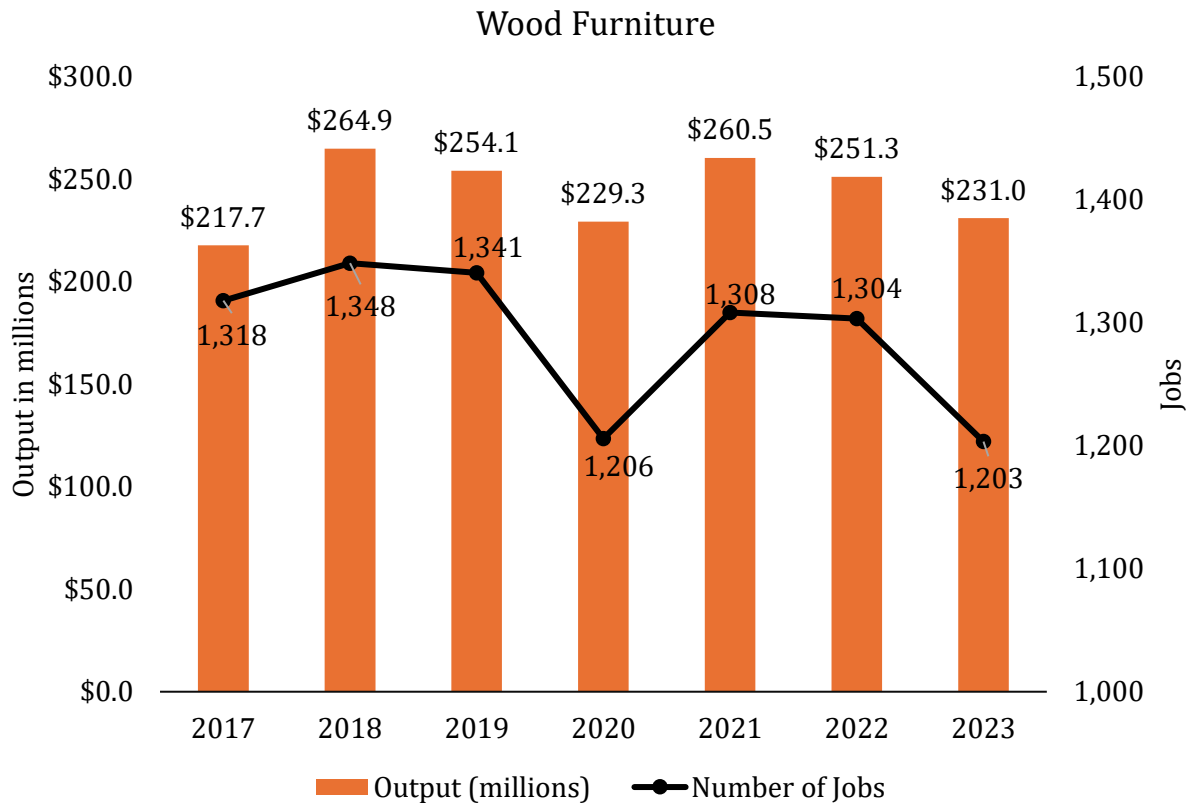


Figure 10: Trend in direct employment and output for the Wood Furniture industry in Vermont, 2017–2023.

Pulp, Paper, and Paperboard Mills

Economic Contribution of Pulp, Paper, and Paperboard Mills

Table 10 details the economic contribution of the Pulp, Paper, and Paperboard Mills industry, the state's most capital-intensive forest sector. In 2023, these mills generated the highest Direct Output (\$478.7 million) and Direct Value-Added (\$94.2 million) of any manufacturing group in the sector, despite ranking as one of the smallest direct employers with only 581 jobs. This disparity highlights the sector's distinct operational model: unlike the labor-intensive Forestry or Furniture sectors, the Paper sector relies on heavy automation and high-volume processing to generate value.

The sector exhibits a powerful Employment Multiplier of 3.40, meaning that for every 100 jobs inside a paper or paperboard mill, nearly 240 additional jobs are supported elsewhere in Vermont. A defining characteristic of this industry is that its Indirect Employment (905 jobs) significantly exceeds its Direct Employment (581 jobs). This “inverted” employment profile reflects the capital- and input-intensive nature of paper and paperboard manufacturing. The

facilities themselves require relatively fewer workers due to automation and specialized production processes, but they rely on substantial purchases of intermediate goods and services. Although a large share of material inputs, including fiber, is imported, IMPLAN estimates indicate that roughly 24% by paper mills and 33% by paperboard mills of non-labor and non-capital inputs are purchased within Vermont. These in-state purchases, combined with the sector's relatively small direct workforce, help explain why the indirect employment effect is high relative to direct employment.

When fully aggregated, the sector supports a total of 1,976 jobs and generates \$765.5 million in total economic output. Furthermore, the quality of direct employment in this sector is exceptional; with total labor income of nearly \$56.2 million distributed among 581 workers, the average annual compensation per direct job is approximately \$96,700. This is significantly higher than the average in the solid wood or forestry sectors, reflecting the specialized technical skills required to operate complex milling machinery.

Table 10: Direct, Indirect, and Induced Economic Contributions of the Paper, and Paperboard Mills Industry in Vermont, 2023.[†]

	Employment	Labor Income	Value-Added	Output
Direct	581	\$56,188	\$94,174	\$478,672
Indirect	905	\$59,680	\$96,805	\$201,806
Induced	490	\$28,169	\$53,392	\$85,046
Total	1,976	\$144,036	\$244,370	\$765,524

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Paper, and Paperboard Mills (2017–2023)

As illustrated in Figure 11, the Paper, and Paperboard Mills sector in Vermont has navigated a period of structural downward adjustment, though recent data indicates a notable stabilization. Over the full seven-year period, the industry has contended with the broader secular decline in graphic paper demand, resulting in a 19.5% reduction in real output from the 2017 baseline (\$594.6 million) to 2023 (\$478.7 million).

However, unlike the sharp, continuous contractions observed in other regional markets, Vermont's sector displayed a distinct rebound in 2023. After hitting a period low in 2022, where employment fell to 554 jobs and output dropped to \$450.5 million, the sector posted solid gains in the most recent year. Between 2022 and 2023, direct output expanded by 6.3% (increasing by \$28.2 million), and employment recovered by 4.9% (adding 27 jobs). This "U-shaped" recovery suggests that the remaining facilities have successfully recalibrated their operations. The simultaneous rise in jobs and output in 2023 signals that the sector may have found a sustainable equilibrium, transitioning away from volatile commodity grades toward more

specialized or resilient paperboard and packaging products that justify renewed labor investment.

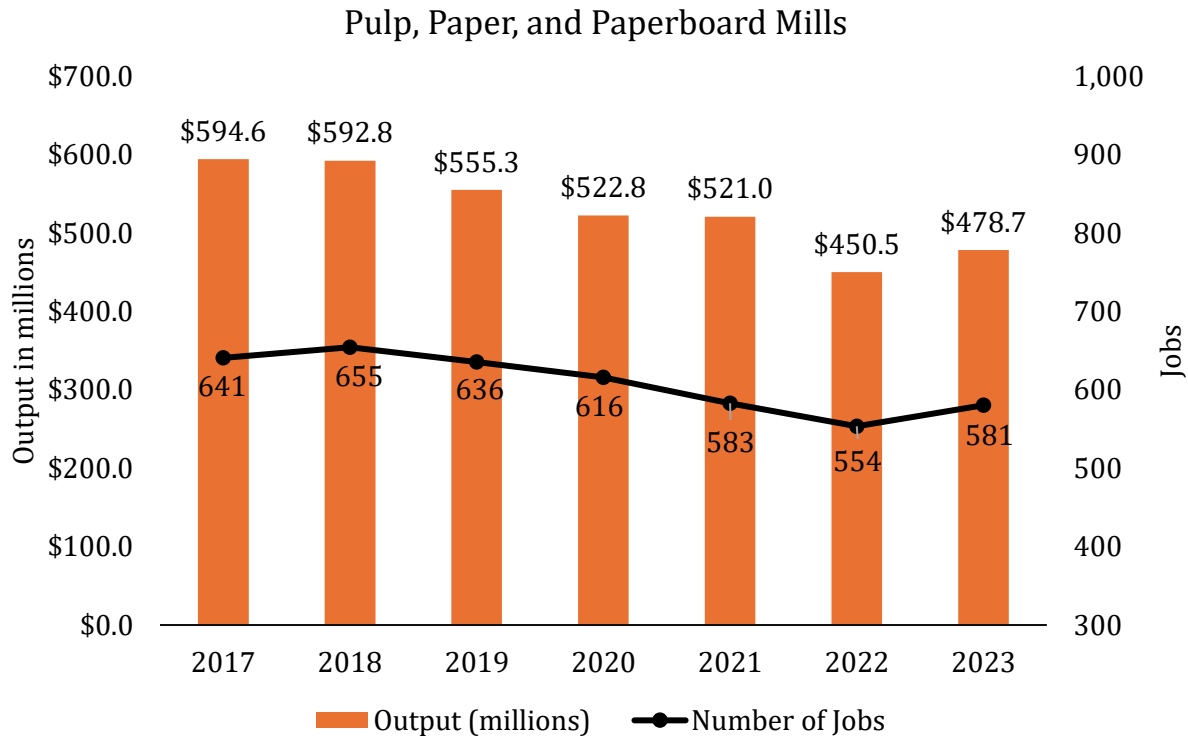


Figure 11: Trend in direct employment and output for the Paper, and Paperboard Mills industry in Vermont, 2017–2023.

Secondary Paperboard and Other Paper Products

Economic Contribution of Secondary Paperboard and Other Paper Products

Table 11 outlines the economic contribution of the Secondary Paperboard and Other Paper Products industry. This industry group is distinct from Paper and Paperboard Mills, which are classified separately in this report. While paper and paperboard mills produce paper or paperboard from pulp, recycled fiber, or other fiber inputs, the secondary paperboard and other paper products category captures downstream converting activities that use purchased paper, paperboard, or related materials to manufacture products such as paperboard containers, paper bags, coated or treated paper, and other converted paper products. In Vermont, this sector is more consolidated due to the absence of specific manufacturing activities such as sanitary and stationery product manufacturing.

In 2023, this converting sector was the smallest direct employer among Vermont's seven forest product industry groups, directly employing 53 workers and generating \$26.4 million in direct output.

Despite its small direct footprint, the sector demonstrates a respectable capacity for job creation relative to its size. The implied Employment Multiplier is 2.06, meaning that for every 100 jobs in a box plant or paper converter, roughly 106 additional jobs are supported throughout the state economy. The Indirect Employment effect (31 jobs) is approximately 58% the size of the Direct Employment (53 jobs). This indicates that while these manufacturers do source intermediate inputs (likely industrial paper rolls and paperboard) from the regional mill network, the scale of supply-chain purchasing is naturally limited by the sector's smaller overall production volume in the state.

In terms of total contribution, the sector supports a total of 109 jobs and contributes \$38.2 million in total economic output. While it remains a niche component of the state's broader forest economy, it provides essential packaging solutions that support other local industries, contributing a reported total Value-Added of \$55.6 million to the Gross State Product.

Table 11: Direct, Indirect, and Induced Economic Contributions of the Secondary Paperboard and Other Paper Products Industry in Vermont, 2023. [†]

	Employment	Labor Income	Value-Added	Output
Direct	53	\$4,024	\$5,526	\$26,361
Indirect	31	\$2,230	\$3,683	\$7,466
Induced	25	\$1,442	\$46,376	\$4,355
Total	109	\$7,696	\$55,585	\$38,181

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.

Trend Analysis: Secondary Paperboard and Other Paper Products Industry (2017–2023)

As illustrated in Figure 12, the Secondary Paperboard and Other Paper Products industry in Vermont operates as a small, specialized niche that has experienced a long-term contraction over the study period. Unlike larger regional markets that saw e-commerce-driven expansion in packaging, Vermont's sector has not exhibited similar growth. Between 2017 and 2023, real industry output declined by 34.3%, falling from a period high of \$40.2 million to \$26.4 million. Direct employment followed a nearly identical downward trajectory, shrinking by 30.3% from 76 jobs in 2017 to 53 jobs in 2023. The trend line reveals that the sector hit a distinct bottom during the pandemic year of 2020, with output dropping to \$26.0 million and employment to just 48 jobs. While the industry staged a modest recovery in 2021 and 2022, climbing back to 59 jobs and \$30.2 million in output, this momentum was not sustained in the most recent year. In 2023, both metrics retreated again, with output falling by 8.7% and employment by 10.2% compared to 2022 levels.

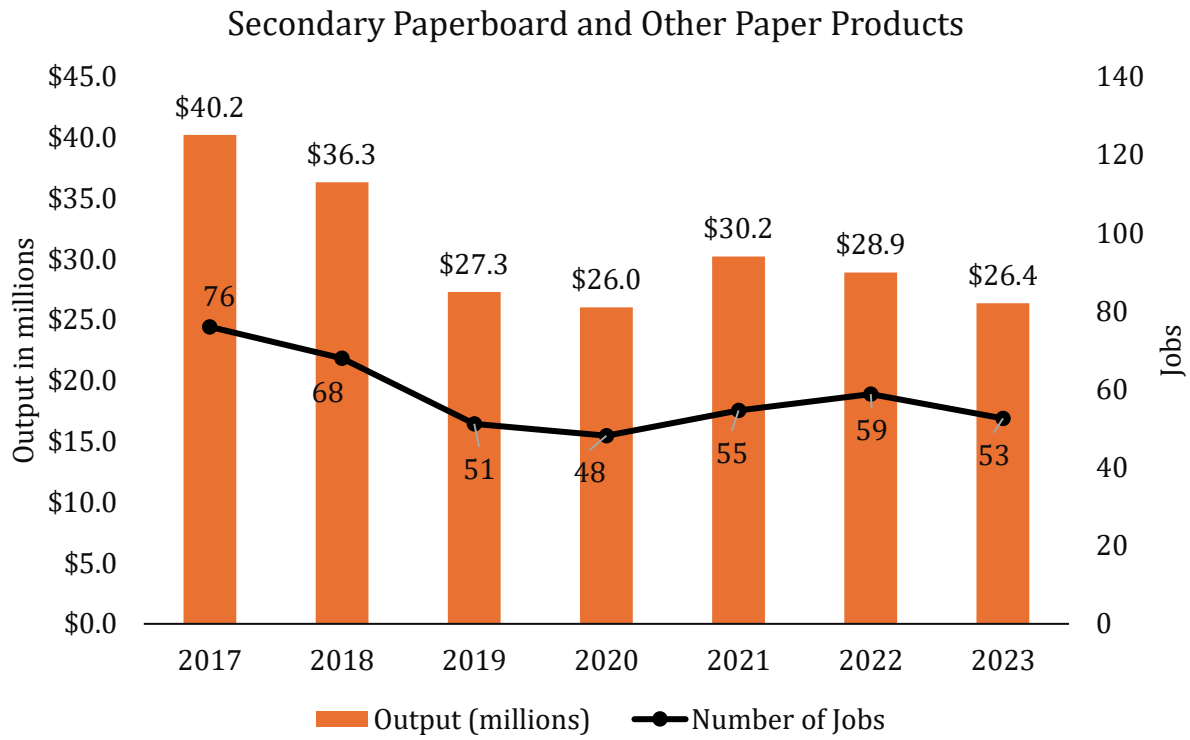


Figure 12: Trend in direct employment and output for the Secondary Paperboard and Other Paper Products industry in Vermont, 2017–2023.

Top Forest Product Sectors

Vermont's forest-products sector is represented by 27 IMPLAN industries, as seven forest-related sectors, used for the analysis: reconstituted wood product manufacturing, pulp mills, stationery product manufacturing, sanitary paper product manufacturing, and all other converted paper product manufacturing, do not appear in the state's 2023 industry mix.

The economic contributions of the top five industries reveal a sharp divergence between labor-intensive rural activities and capital-intensive manufacturing (Table 12). Maple Syrup Production is the undisputed driver of employment, supporting 2,333 jobs; more than double the next largest sector, Commercial Logging (1,145 jobs). Collectively, the top five employers, including Non-upholstered Wood Household Furniture, Sawmills, and Forestry Support, account for approximately 70 percent of the sector's 7,700 jobs, indicating that the majority of the workforce is concentrated in land-based forest production, harvesting, and primary processing.

However, financial leadership shifts dramatically toward high-efficiency manufacturing. Paperboard Mills ranks first in Output (\$380.0 million), Value Added (\$73.7 million), and Labor Income (\$44.1 million), despite not ranking among the top five employers. This highlights the sector's immense productivity per worker compared to the labor-heavy extraction industries. Sawmills also act as a critical economic anchor, ranking second in both Output (\$265.4 million) and Value Added (\$48.0 million). The data underscores a dual-structure economy: while Maple Syrup and Logging provide the volume of rural jobs, the industrial wealth is primarily generated by Paperboard and Sawmill facilities, with the top five output sectors alone accounting for roughly 62 percent of the industry's total gross revenue.

Table 12: Top five industries in terms of direct Economic Contributions in Vermont state, 2023. [†]

Rank	Employment	Labor Income	Value added	Output
1	Maple Syrup Production (2,333)	Paperboard mills (\$44,131)	Paperboard mills (\$73,729)	Paperboard mills (\$380,010)
2	Commercial logging (1,145)	Non-upholstered wood household furniture manufacturing (\$42,634)	Sawmills (\$47,954)	Sawmills (\$265,389)
3	Non- upholstered wood household furniture manufacturing (805)	Maple Syrup Production (\$34,536)	Non-upholstered wood household furniture manufacturing (\$46,477)	Non-upholstered wood household furniture manufacturing (\$142,366)
4	Sawmills (572)	Commercial logging (\$34,278)	Maple Syrup Production (\$42,787)	Paper mills (\$98,661)
5	Support activities for forestry (532)	Sawmills (\$32,075)	Commercial logging (\$42,503)	Maple Syrup Production (\$79,805)

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Top Non-Forest Industries supported by the Forest Sector in 2023

Excluding the forest-products industries themselves, Vermont included 361 IMPLAN sectors in 2023 representing the broader regional economy. The forest sector supported at least one job in 146 industries and at least ten jobs in 91 industries. Table 13 highlights the top ten non-forest industries most heavily impacted by this economic activity. Together, these ten sectors account for 1,199 jobs, representing approximately 32.3 percent of all indirect and induced employment generated by the forest economy. The composition of these top sectors reveals two distinct drivers of impact:

- **Logistics and Supply Chain:** The strongest business-to-business linkages are found in the trade and movement of physical goods. Wholesale - Other durable goods merchant wholesalers ranks as the single largest supporting sector (283 jobs), followed by Truck Transportation (119 jobs), Warehousing and Storage (90 jobs), and Couriers and Messengers (71 jobs). This underscores the forest sector's heavy reliance on a robust logistics network to aggregate raw timber from rural harvest sites and distribute finished paper and lumber products to regional markets.
- **Induced Household and Service Spending:** The presence of Other Real Estate (154 jobs), Hospitals (136 jobs), and Restaurants (Full-service: 105 jobs; Limited-service: 78 jobs) in the top ten illustrates the "induced" power of the forest workforce. These jobs are supported not by mill operational purchases, but by the income spent by forest-sector employees in their local communities. The high ranking of Real Estate and Hospitals specifically indicates that the forest sector provides the foundational income necessary to support essential local services and property markets in Vermont.

Table 13: Top Ten Industries Impacted by Vermont state's Forest Products Industries in terms of number of jobs in 2023.

Industries	Number of Jobs
Wholesale - Other durable goods merchant wholesalers	283
Other real estate	154
Hospitals	136
Truck transportation	119
Full-service restaurants	105
Individual and family services	94
Warehousing and storage	90
Limited-service restaurants	78
Couriers and messengers	71
Employment services	71
Total	1,199

In terms of economic output, the forest sector's influence shifts toward capital-intensive infrastructure, financial services, and trade sectors. As detailed in Table 14, the top ten industries supported by forest-sector activity generated a combined \$336.7 million in 2023. The dominant category involves the movement and wholesale distribution of goods, reflecting the forest industry's heavy reliance on logistics to move high volumes of timber, lumber, and paper products.

The leading sector is Wholesale - Other Durable Goods, generating \$87.8 million in output. When combined with Wholesale - Other Nondurable Goods (\$20.8 million), the wholesale trade sector alone accounts for over \$108 million in economic activity supported by the forest industry. Unlike the employment rankings, the output rankings highlight the sector's significant energy footprint; Electric Power Transmission and Distribution ranks third with \$49.2 million, driven by the substantial electricity consumption required for wood processing and paper milling. Similarly, Truck Transportation generated \$26.1 million, underscoring the critical role of freight logistics in the supply chain.

The presence of Owner-Occupied Housing as the second-largest sector (\$50.5 million), and Other real estate as fourth largest sector (\$28.8 million) is a significant indicator of the induced effect. In economic modeling, this sector represents the imputed value of homeownership. Additionally, the sector supports \$28.4 million in output for Hospitals and notable activity in financial sectors like Monetary Authorities (\$17.6 million) and Insurance (\$27.4 million combined), further reflecting the essential spending power and financial stability of the forest workforce within their local communities.

Table 14: Top Ten Industries impacted by Vermont State's Forest Products Industries in terms of output production in 2023.[†]

Industries	Output
Wholesale - Other durable goods merchant wholesalers	\$87,793
Owner-occupied housing	\$50,521
Electric power transmission and distribution	\$49,171
Other real estate	\$28,863
Hospitals	\$28,385
Truck transportation	\$26,087
Wholesale - Other nondurable goods merchant wholesalers	\$20,817
Monetary authorities and depository credit intermediation	\$17,617
Insurance agencies, brokerages, and related activities	\$15,341
Insurance carriers, except direct life	\$12,057
Total	\$336,652

† All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Importance of the Forest Products Industries in Context

Natural Resources and Agricultural Industries

To contextualize the economic importance of the forest economy, Table 15 compares the direct contributions of Vermont's four primary natural resource sectors: Forest Products, Agriculture, Commercial Fishing/Hunting, and Mining. Unlike states with a single dominant resource sector, the data reveals that Vermont's rural economy relies on a "dual-pillar" structure anchored by both Forest Products and Agriculture. While Agriculture remains the state's largest employer, the Forest Products industry stands out as the primary driver of industrial output.

In 2023, the Forest Products sector generated \$1.56 billion in direct output, accounting for 49.3 percent of the total output produced by Vermont's natural resource base. This makes the forest sector the undisputed fiscal leader, generating roughly 1.7 times more output than the Agriculture sector (\$911.5 million) and more than double the Mining sector (\$688.3 million). However, in terms of employment and value-added, the two dominant sectors compete closely. Agriculture ranks first in employment (8,526 jobs) and Value-Added (\$448.8 million), edging out Forest Products (7,700 jobs and \$432.4 million Value-Added). Collectively, these two sectors are essential to the rural workforce, jointly supporting over 16,200 jobs, or 91.4 percent of the entire natural resources employment base.

The comparative trend analysis highlights distinct economic trajectories over the study period. The Forest Products sector has experienced a broad-based, moderate contraction, with declines across all four metrics (Output -9.3 percent, Employment -15.4 percent). In contrast, the Agriculture sector exhibits a complex "value-over-volume" restructuring. While Agriculture saw declines in physical scale (Output -17.8 percent, Employment -13.5 percent), it achieved remarkable gains in profitability and wealth retention, with Labor Income surging by 103.6 percent and Value-Added rising by 20.4 percent. This suggests that while Vermont farms are producing less gross volume, they are capturing significantly higher margins. Meanwhile, the Mining sector displays the opposite trend: while it expanded its footprint (Jobs +22.8 percent, Output +38.5 percent), its economic quality declined, with Value-Added dropping by 30.6 percent, indicating a period of rapid expansion accompanied by margin compression.

Table 15: Natural Resources and Agricultural Production Industries in Vermont state, 2023. [†]

Industry	Employment	Δ2017	Labor Income	Δ2017 ^{††}	Value-Added	Δ2017 ^{††}	Output	Δ2017 ^{††}
1. Forest Products	7,700	-15.4%	\$314,390	-11.8%	\$432,398	-10.1%	\$1,557,872	-9.3%
2. Commercial fishing, hunting & trapping	65	-10.1%	\$1,663	1008.3%	\$2,274	304.3%	\$2,915	312.4%
3. Mining, and oil & gas production	1,460	22.8%	\$87,787	48.0%	\$254,258	-30.6%	\$688,286	38.5%
4. Agriculture production (plant crops and animals)	8,526	-13.5%	\$377,180	103.6%	\$448,780	20.4%	\$911,466	-17.8%
Total	17,751	-12.2%	\$781,020	29.9%	\$1,137,709	-6.8%	\$3,160,539	-4.9%

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

^{††} All percentage differences are calculated in real terms using 2023 constant dollars.

Manufacturing Industries

To assess the relative standing of the forest sector within Vermont's industrial base, Table 16 compares "Forest Products Manufacturing" against the state's other major manufacturing groups. Note that in this context, "Forest Products" refers specifically to the manufacturing sub-sectors (Groups 3 through 7), excluding the extraction activities of forestry and logging and other non-manufacturing sectors (IMPLAN codes 10, 15, 16, 19, and 40 see Appendix A). The data shows that the forest sector serves as a top-tier industrial anchor, functioning as the state's second-largest manufacturing employer.

The manufacturing landscape in Vermont is defined by a "Big Three" dynamic between Food, Forest Products, and Computer & Electronic Products. In terms of employment, the Food Manufacturing sector is the dominant leader (6,668 jobs). However, Forest Products follows as the solid second-largest employer with 3,603 jobs, slightly edging out the Computer and Electronic Product sector (3,403 jobs). Together, these three sectors account for 44.2 percent of Vermont's entire manufacturing workforce (13,674 out of 30,909 jobs), highlighting a concentrated industrial base.

In terms of gross output and value creation, the rankings shift, reflecting the varying capital intensities of these industries. While Forest Products ranks second in jobs, it ranks third in Output (\$1.40 billion) and fourth in Value-Added (\$325.8 million). The Food sector leads output (\$4.34 billion), while the high-tech Computer and Electronic sector leads in Value-Added (\$528.0 million) despite having fewer workers. This indicates that while the Forest Products sector is a vital provider of blue-collar employment, its financial leverage per worker is lower than the state's high-tech and food processing hubs.

Nevertheless, the Forest Products sector remains a massive component of Vermont's manufacturing capacity. In 2023, it accounted for 11.7 percent of all manufacturing jobs, 9.7 percent of all manufacturing output, and 9.3 percent of all manufacturing labor income. Productivity analysis reveals distinct operational differences: The Forest Products sector generates approximately \$388,770 in output per worker. This is lower than the state manufacturing average of roughly \$465,600 and significantly below the capital-intensive Food sector (\$651,570 per worker). This suggests that Vermont's forest manufacturing mix, weighted more toward labor-intensive woodworking and furniture making rather than automated heavy industry, prioritizes job creation over raw volume throughput.

Table 16: Manufacturing Industries in Vermont state, 2023. [†]

Manufacturing Industries	Employment	Labor Income	Value Added	Output
Food	6,668	\$414,305	\$515,470	\$4,344,698
Forest Products	3,603	\$229,383	\$325,816	\$1,400,737
Computer and Electronic Product	3,403	\$436,206	\$527,973	\$2,052,586
Machinery	2,527	\$228,345	\$417,295	\$964,886
Miscellaneous	2,225	\$146,381	\$237,150	\$675,600
Fabricated Metal	1,876	\$141,085	\$199,257	\$551,262
Transportation Equipment	1,838	\$182,835	\$285,733	\$911,911
Nonmetallic Mineral Product	1,748	\$134,276	\$178,159	\$488,524
Beverage and Tobacco Product	1,479	\$122,805	\$189,214	\$589,492
Chemical	1,298	\$140,270	\$167,443	\$1,019,202
Plastics and Rubber Products	1,118	\$87,978	\$126,741	\$427,497
Textiles and Apparel	1,070	\$56,077	\$86,620	\$210,798
Printing	984	\$53,244	\$59,665	\$161,830
Electrical Equipment	896	\$80,549	\$100,258	\$391,602
Primary Metal	107	\$12,676	\$21,864	\$116,172
Petroleum and Coal	69	\$7,940	\$24,601	\$84,202
Total	30,909	\$2,474,355	\$3,463,259	\$14,391,001
Compared to 2017	-6%	-8%	1%	-11%

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Summary

The 2023 economic contribution report confirms that the Forest Products sector remains a cornerstone of Vermont's rural economy and a significant pillar of its manufacturing base. Navigating a complex landscape of environmental challenges and market consolidations, the sector has demonstrated resilience, anchoring employment in rural counties while generating substantial industrial output.

In 2023, the Forest Products sector directly employed 7,700 individuals and generated \$1.56 billion in direct economic output. The sector's influence extends deeply into the broader economy; when accounting for indirect supply chain purchases and induced household spending, the total contribution reached 11,409 jobs and \$2.33 billion in total output. This indicates a robust employment multiplier of 1.48, meaning nearly every two direct jobs in the forest sector support one additional job elsewhere in the Vermont economy.

The industry exhibits a distinct bifurcation between its land-based and manufacturing arms. The Forestry and Logging sectors serve as the primary employers, supporting over 53% of the direct workforce (4,086 jobs), driven largely by maple syrup production and logging. Conversely, the manufacturing sectors, Paper and Paperboard Mills and Primary Solid Wood Products, drive the state's industrial wealth. Despite employing fewer workers, the Paper sector alone generated nearly \$479 million in direct output, highlighting the high capital intensity and value-generation capacity of Vermont's mills.

Within the state's natural resources base, Forest Products stands as the undisputed fiscal leader, generating nearly 50% of all direct output from natural resource sectors (\$1.56 billion), surpassing Agriculture (\$911.5 million) and Mining (\$688.3 million). In the broader manufacturing landscape, it functions as a critical "Big Three" industry alongside Food and Computer & Electronic Products. Ranking as the second-largest manufacturing employer (3,603 jobs), the forest sector provides essential blue-collar employment opportunities that offer wages competitive with or exceeding other rural industries.

The study period (2017–2023) reveals a sector in transition. While manufacturing output has shown signs of stabilization and even growth in areas like sawmilling and furniture, the raw material extraction sectors faced significant headwinds in 2023. Ultimately, by converting local renewable resources into high-value maple syrup, lumber, paper, and furniture, the sector not only sustains the state's working landscape but also exports substantial wealth, solidifying its role as an enduring engine of Vermont's economic identity.

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Appendix A: Forest Products Industries Groupings and IMPLAN Sectors

A1: Forestry Industry Grouping and IMPLAN Sectors

Industry Code	Industry name
10	All other crop farming*
15	Forestry, forest products, and timber tract production
19	Support activities for agriculture and forestry-*

Note: Sectors with an “*” indicate that only a portion of the sector is included in the forest products industries.

A2: Logging Industry Grouping and IMPLAN Sector

Industry Code	Industry name
16	Commercial logging

A3: Primary Solid Wood Products Industry Grouping and IMPLAN Sectors

Industry Code	Industry name
40	Electric power generation – Biomass**
124	Sawmills
125	Wood preservation
126	Veneer and plywood manufacturing
128	Reconstituted wood product manufacturing***

Note: Sectors with “**” indicate that it is treated as **full sector** in 2023; however in 2017 it was treated as a **partial (wood component only)** so the numbers are not strictly comparable. Sectors denoted by “***” indicate that the corresponding FPI is not present in Vermont.

A4: Secondary Solid Wood Products Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
127	Engineered wood member and truss manufacturing
129	Wood windows and door manufacturing
130	Cut stock, resawing lumber, and planning
131	Other millwork, including flooring
132	Wood container and pallet manufacturing
133	Manufactured home (mobile home) manufacturing
134	Prefabricated wood building manufacturing
135	All other miscellaneous wood product manufacturing

A5: Wood Furniture Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
348	Wood kitchen cabinet and countertop manufacturing
349	Upholstered household furniture manufacturing
350	Nonupholstered wood household furniture manufacturing
352	Institutional furniture manufacturing**
353	Wood office furniture manufacturing
354	Custom architectural woodwork and millwork
356	Showcase, partition, shelving, and locker manufacturing**

Note: Sectors with “**” indicate that it is treated as **full sector** in 2023; however in 2017 it was treated as a **partial (wood component only)** so the numbers are not strictly comparable.

A6: Pulp, Paper, and Paperboard Mills Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
136	Pulp mills***
137	Paper mills
138	Paperboard mills

Sectors denoted by “***” indicate that the corresponding FPI is not present in Vermont.

A7: Secondary Paperboard and Other Paper Products Industry Grouping and IMPLAN Sectors.

Industry Code	Industry name
139	Paperboard container manufacturing
140	Paper bag and coated and treated paper manufacturing
141	Stationery product manufacturing***
142	Sanitary paper product manufacturing***
143	All other converted paper product manufacturing***

Sectors denoted by “***” indicate that the corresponding FPI is not present in Vermont.

Appendix B. Detailed Economic Contribution Results of 2023

B1: Direct Economic Contribution by IMPLAN Sector, 2023

B1.1: Direct Economic Contributions, Forestry Sector Details, 2023. [†]

Industries	Employment	Labor Income	Value-Added	Output
All other crop farming	2,333	\$34,536	\$42,787	\$79,805
Forestry, forest products, and timber tract production	76	\$2,447	\$4,706	\$5,452
Support activities for agriculture and forestry	532	\$12,459	\$12,903	\$14,056
Total	2,941	\$49,442	\$60,396	\$99,313

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.2: Direct Economic Contributions, Logging Sector Details (2023, in 2023 USD). [†]

Industries	Employment	Labor Income	Value-Added	Output
Commercial logging	1,145	\$34,278	\$42,503	\$47,195
Total	1,145	\$34,278	\$42,503	\$47,195

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.3: Direct Economic Contributions, Primary Solid Wood Products Sector Details (2023, in 2023 USD).[†]

Industries	Employment	Labor Income	Value- Added	Output
Electric power generation - Biomass	11	\$1,286	\$3,683	\$10,626
Sawmills	572	\$32,075	\$47,954	\$265,389
Wood preservation	65	\$3,910	\$9,173	\$51,814
Veneer and plywood manufacturing	171	\$9,735	\$15,869	\$59,253
Reconstituted wood product manufacturing	0	\$0	\$0	\$0
Total	818	\$47,007	\$76,678	\$387,082

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.4: Direct Economic Contributions, Secondary Solid Wood Products Sector Details (2023, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	29	\$1,854	\$2,544	\$11,228
Wood windows and door manufacturing	191	\$11,230	\$14,772	\$53,712
Cut stock, resawing lumber, and planing	33	\$1,552	\$2,550	\$11,649
Other millwork, including flooring	217	\$11,885	\$18,038	\$64,639
Wood container and pallet manufacturing	37	\$1,642	\$2,057	\$8,461
Manufactured home (mobile home) manufacturing	17	\$896	\$1,021	\$4,877
Prefabricated wood building manufacturing	218	\$14,133	\$21,657	\$76,686
All other miscellaneous wood product manufacturing	216	\$12,277	\$16,590	\$56,957
Total	960	\$55,470	\$79,229	\$288,208

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.5: Direct Economic Contributions, Wood Furniture Sector Details (2023, 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Wood kitchen cabinet and countertop manufacturing	105	\$5,873	\$6,509	\$18,691
Upholstered household furniture manufacturing	52	\$1,944	\$2,199	\$9,873
Nonupholstered wood household furniture manufacturing	805	\$42,634	\$46,477	\$142,366
Institutional furniture manufacturing	45	\$2,152	\$2,402	\$9,223
Wood office furniture manufacturing	78	\$6,795	\$7,929	\$21,619
Custom architectural woodwork and millwork	29	\$2,171	\$921	\$5,480
Showcase, partition, shelving, and locker manufacturing	91	\$6,411	\$7,455	\$23,789
Total	1,203	\$67,980	\$73,892	\$231,041

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.6: Direct Economic Contributions, Pulp, Paper, and Paperboard Mills Sector Details (2023, in 2023 USD). [†]

Industries	Employment	Labor Income	Value-Added	Output
Pulp mills	0	\$0	\$0	\$0
Paper mills	129	\$12,057	\$20,444	\$98,661
Paperboard mills	451	\$44,131	\$73,729	\$380,010
Total	581	\$56,188	\$94,174	\$478,672

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B1.7: Direct Economic Contributions, Secondary Paperboard and Other Paper Products Sector Details (2023, in 2023 USD). [†]

Industries	Employment	Labor Income	Value-Added	Output
Paperboard container manufacturing	26	\$2,060	\$2,798	\$14,526
Paper bag and coated and treated paper manufacturing	26	\$1,964	\$2,729	\$11,835
Stationery product manufacturing	0	\$0	\$0	\$0
Sanitary paper product manufacturing	0	\$0	\$0	\$0
All other converted paper product manufacturing	0	\$0	\$0	\$0
Total	53	\$4,024	\$5,526	\$26,361

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B2: Direct Economic Contribution by IMPLAN Sector, 2017 (2017 USD)

B2.1: Direct Economic Contributions, Forestry Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
All other crop farming	2636	\$17,188	\$25,908	\$53,460
Forestry, forest products, and timber tract production	67	\$1,993	\$2,155	\$3,918
Support activities for agriculture and forestry	638	\$15,692	\$15,906	\$18,355
Total	3342	\$34,873	\$43,968	\$75,732

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B2.2: Direct Economic Contributions, Logging Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Commercial logging	1737	\$50,332	\$52,799	\$90,979
Total	1737	\$50,332	\$52,799	\$90,979

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.3: Direct Economic Contributions, Primary Solid Wood Products Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value- Added	Output
Electric power generation - Biomass	58	\$5,038	\$19,621	\$43,561
Sawmills	638	\$28,548	\$38,964	\$179,582
Wood preservation	40	\$1,443	\$4,954	\$23,948
Veneer and plywood manufacturing	204	\$12,346	\$16,229	\$58,875
Reconstituted wood product manufacturing	0	\$0	\$0	\$0
Total	941	\$47,374	\$79,769	\$305,966

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.4: Direct Economic Contributions, Secondary Solid Wood Products Sector Details (2017, in Nominal 2017 USD). [†]

Industries	Employment	Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	0	\$0	\$0	\$0
Wood windows and door manufacturing	283	\$14,826	\$23,560	\$68,070
Cut stock, resawing lumber, and planing	45	\$1,184	\$2,666	\$9,921
Other millwork, including flooring	198	\$8,630	\$15,854	\$43,565
Wood container and pallet manufacturing	53	\$1,292	\$1,894	\$7,293
Manufactured home (mobile home) manufacturing	40	\$1,559	\$3,587	\$10,195
Prefabricated wood building manufacturing	161	\$8,224	\$10,646	\$28,970
All other miscellaneous wood product manufacturing	273	\$9,961	\$16,835	\$49,947
Total	1053	\$45,676	\$75,042	\$217,960

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.5: Direct Economic Contributions, Wood Furniture Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Wood kitchen cabinet and countertop manufacturing	207	\$8,180	\$8,175	\$26,838
Upholstered household furniture manufacturing	38	\$1,008	\$1,002	\$6,293
Non-upholstered wood household furniture manufacturing	869	\$38,770	\$37,627	\$103,580
Institutional furniture manufacturing	6	\$181	\$182	\$897
Wood office furniture manufacturing	46	\$2,171	\$2,071	\$8,514
Custom architectural woodwork and millwork	39	\$1,850	\$1,848	\$5,601
Showcase, partition, shelving, and locker manufacturing	113	\$6,822	\$6,597	\$22,009
Total	1318	\$58,983	\$57,502	\$173,733

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.6: Direct Economic Contributions, Pulp, Paper, and Paperboard Mills Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Pulp mills	0	\$0	\$0	\$0
Paper mills	231	\$17,505	\$28,436	\$163,375
Paperboard mills	410	\$32,336	\$50,112	\$311,022
Total	641	\$49,841	\$78,548	\$474,397

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B2.7: Direct Economic Contributions, Secondary Paperboard and Other Paper Products Sector Details (2017, in Nominal 2017 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Paperboard container manufacturing	38	\$2,264	\$2,885	\$16,707
Paper bag and coated and treated paper manufacturing	38	\$2,128	\$2,894	\$15,376
Stationery product manufacturing	0	\$0	\$0	\$0
Sanitary paper product manufacturing	0	\$0	\$0	\$0
All other converted paper product manufacturing	0	\$0	\$0	\$0
Total	76	\$4,393	\$5,779	\$32,082

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2017 dollars value.

B3: Direct Economic Contribution by IMPLAN Sector, 2017 (2023 USD)

B3.1: Direct Economic Contributions, Forestry Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
All other crop farming	2,636	\$21,016	\$31,678	\$67,002
Forestry, forest products, and timber tract production	67	\$2,437	\$2,635	\$4,910
Support activities for agriculture and forestry	638	\$19,187	\$19,448	\$23,004
Total	3,342	\$42,641	\$53,761	\$94,917

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.2: Direct Economic Contributions, Logging Sector Details (2017, in 2023 USD). [†]

Industries	Employment	Labor Income	Value-Added	Output
Commercial logging	1,737	\$61,542	\$64,558	\$114,026
Total	1,737	\$61,542	\$64,558	\$114,026

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.3: Direct Economic Contributions, Primary Solid Wood Products Sector Details (2017, in 2023 USD). [†]

Industries	Employment	Labor Income	Value-Added	Output
Electric power generation - Biomass	58	\$6,160	\$23,992	\$54,596
Sawmills	638	\$34,907	\$47,643	\$225,074
Wood preservation	40	\$1,764	\$6,058	\$30,014
Veneer and plywood manufacturing	204	\$15,095	\$19,844	\$73,789
Reconstituted wood product manufacturing	0	\$0	\$0	\$0
Total	941	\$57,926	\$97,536	\$383,473

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.4: Direct Economic Contributions, Secondary Solid Wood Products Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Engineered wood member and truss manufacturing	0	\$0	\$0	\$0
Wood windows and door manufacturing	283	\$18,128	\$28,808	\$85,314
Cut stock, resawing lumber, and planing	45	\$1,448	\$3,259	\$12,435
Other millwork, including flooring	198	\$10,552	\$19,385	\$54,600
Wood container and pallet manufacturing	53	\$1,580	\$2,316	\$9,140
Manufactured home (mobile home) manufacturing	40	\$1,906	\$4,386	\$12,777
Prefabricated wood building manufacturing	161	\$10,056	\$13,017	\$36,309
All other miscellaneous wood product manufacturing	273	\$12,179	\$20,585	\$62,599
Total	1,053	\$55,849	\$91,756	\$273,174

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.5: Direct Economic Contributions, Wood Furniture Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value-Added	Output
Wood kitchen cabinet and countertop manufacturing	207	\$10,002	\$9,995	\$33,637
Upholstered household furniture manufacturing	38	\$1,233	\$1,225	\$7,887
Nonupholstered wood household furniture manufacturing	869	\$47,405	\$46,008	\$129,819
Institutional furniture manufacturing	6	\$222	\$222	\$1,124
Wood office furniture manufacturing	46	\$2,655	\$2,532	\$10,671
Custom architectural woodwork and millwork	39	\$2,262	\$2,259	\$7,020
Showcase, partition, shelving, and locker manufacturing	113	\$8,342	\$8,067	\$27,584
Total	1,318	\$72,120	\$70,309	\$217,743

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.6: Direct Economic Contributions, Pulp, Paper, and Paperboard Mills Sector Details (2017, in 2023 USD).[†]

Industries	Employment	Labor Income	Value- Added	Output
Pulp mills	0	\$0	\$0	\$0
Paper mills	231	\$21,404	\$34,770	\$204,761
Paperboard mills	410	\$39,538	\$61,274	\$389,810
Total	641	\$60,942	\$96,044	\$594,572

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

B3.7: Direct Economic Contributions, Secondary Paperboard and Other Paper Products Sector
Details (2017, in real 2023 Dollars). [†]

Industries	Employment	Labor Income	Value- Added	Output
Paperboard container manufacturing	38	\$2,769	\$3,528	\$20,939
Paper bag and coated and treated paper manufacturing	38	\$2,602	\$3,539	\$19,271
Stationery product manufacturing	0	\$0	\$0	\$0
Sanitary paper product manufacturing	0	\$0	\$0	\$0
All other converted paper product manufacturing	0	\$0	\$0	\$0
Total	76	\$5,371	\$7,066	\$40,209

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars value.

Appendix C. Economic Contribution of Forestry Industry excluding the Maple Syrup production

	Employment	Labor Income [†]	Value-Added [†]	Output [†]
Direct	608	\$14,906	\$17,609	\$19,508
Indirect	3	\$212	\$351	\$720
Induced	62	\$3,560	\$6,745	\$10,746
Total	672	\$18,678	\$24,706	\$30,974

[†] All monetary values (Labor Income, Value-Added, and Output) are in thousands of U.S. dollars, adjusted to 2023 dollars.