

## NEFA'S MISSION

To encourage sound decisions about the management and use of forest resources in the NEFA region by identifying significant regional trends, broadening awareness of forest health and sustainability issues, providing a regional context for state and local decisions about forest resources, and analyzing the environmental, social, and economic impacts of forest land use.

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This series of reports, as well as other NEFA publications, and additional information about NEFA can be found at <http://nefa.conknet.com>.

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# The Economic Importance of the Northeast's Forests



**North East *State* Foresters Association  
March 2001**

## *The economic importance of the Northeast's forests*

**T***his booklet is part of a series on the economic importance of forest-based manufacturing and forest-related recreation and tourism on the economy of the four states in the NEFA region — New York, Vermont, New Hampshire, and Maine. A report for each state is also available. Each report includes an overview of the land base in each state and a summary of federal and state data that provide a picture of the forest-based manufacturing and forest-related recreation and tourism sectors of the economy. The reports do not include indirect or induced multipliers, so all data provided represent direct contributions to the economy.*

*The reports update a similar series produced by NEFA in 1995. Different data sources and methods to calculate values were used at that time, so values from the current reports cannot be compared to the previous ones.*

*Forests provide more than wood products and recreational opportunities. They provide habitat for wildlife, a filtration system for drinking water supplies, soil stabilization, regional green space, and quiet areas for spiritual renewal. The economic benefits associated with these forest values are not included in this report, so the final values are conservative.*



## HIGHLIGHTS

- The contribution of forest-based manufacturing and forest-related tourism and recreation to the NEFA economy is more than **\$18.6 billion** (table 1).
- Forest-based manufacturing provides **\$15.7 billion in value of shipments** annually to the NEFA economy.
- Revenues from forest-related recreation and tourism activities totaled **\$2.9 billion** in 1997.
- The forest-based manufacturing economy provides employment for almost **97,000** people and generates payrolls of **\$3 billion**. Forest-based recreation and tourism provides employment for over **23,000** and generates payrolls of **\$300 million**.
- Forest landowners in the NEFA region receive estimated stumpage revenue annually of **\$533 million**. Total estimated value of roundwood products delivered to mills in New Hampshire, Vermont, and Maine is **\$745 million**.
- Wood biomass provides approximately 6% of energy use in New Hampshire and Vermont, and 24% of energy use in Maine annually. Revenues from sales of biomass chips total **\$34 million**. Sales from cordwood are valued at **\$216 million**.
- The sale of associated forest products, such as Christmas trees, wreaths, maple syrup, and ginseng contributes **\$70 million**.
- Each 1,000 acres of forestland in the NEFA region supports 2.1 forest-based manufacturing jobs and 0.5 forest-related tourism and recreation jobs.

**Table 1. REVENUES FROM NEFA REGION'S FORESTS**

	<i>millions of \$</i>	<i>\$ per acre</i>
Forest-based manufacturing value of shipments	15,700	343
Forest-related tourism and recreation expenditures	2,900	63
Associated forest products	70	2
<b>Totals</b>	<b>18,670</b>	<b>408</b>

# The Forest Resource in the NEFA Region

The NEFA region’s forested ecosystem provides the basis for biological diversity, natural communities, wildlife habitats, and scenic landscapes. The forests of the NEFA region also provide an important economic base for employment, tourism, and recreation, and support a diverse forest products industry. Maine is the most forested state in the United States, followed by New Hampshire.

## Land area

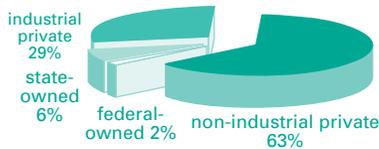
The NEFA region covers 61.5 million acres. Seventy-four percent, or 45.7 million acres, is forested. Of these forested acres, 41.3 million acres (90%) are classified as timberland by the USDA Forest Service, or land that is fertile and accessible enough to produce wood as a crop and is not withdrawn from timber harvesting by statute or regulation (table 2).

**Table 2. TOTAL LAND AREA, FOREST LAND ACRES, AND TIMBERLAND ACRES IN THE NEFA REGION**

total land area	forest land	timberland
61,593,320	45,712,100	41,345,690

Source: USDA Forest Service

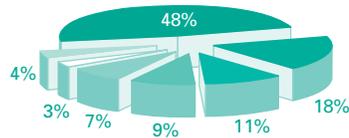
**Figure 1. TIMBERLAND OWNERSHIP, NEFA REGION**



Source: USDA Forest Service

The majority of timberland in the NEFA region (38.5 million acres or 92%) is privately owned by industrial and non-industrial owners. State and federal government own 3.3 million acres, or 8% of timberland (figure 1).

**Figure 2. FOREST TYPES, NEFA REGION**



Source: USDA Forest Service

Certain tree species in the forest grow in association with one another due to similar growing requirements and are referred to as forest types. The northern hardwood forest type is the most common in the NEFA region (figure 2) and covers 20 million acres (47%), followed by the spruce/fir, white/red pine, aspen/birch, oak/hickory, and elm/ash/red maple types.

## Forest-based Manufacturing

The US Bureau of the Census, Census of Manufacturing, 1997, NAICS Series (North American Industrial Classification) provided the data used for this economic sector for Vermont, New Hampshire, and New York. The Bureau of Economic Analysis, 1998, provided data for the Maine report. The Census of Manufacturing typically undercounts the activity in each sector, so data developed by state sources were used when possible.

In order to produce a regional publication using different data sources, some economic sectors have been grouped. The NAICS sectors of Timber Harvesting and Wood Products Manufacturing were combined with the SIC grouping of Lumber and Related Wood Products. NAICS Furniture and Related Products was combined with SIC Furniture and Fixtures. Finally, NAICS Pulp and Paper Manufacturing was combined with SIC Paper and Allied Products.

Data sources for the harvesting, processing, exporting, and importing of forest products vary. Data for Maine and Vermont are from state sources (1999 for Maine, 1998 for Vermont). Data for New York and New Hampshire are taken from a NEFA study on woodflow in the NEFA region (NEFA, 1999).

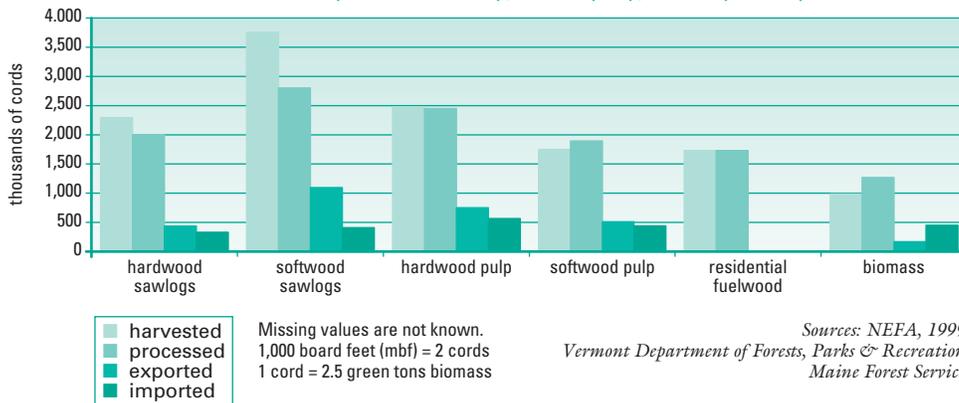
### Primary manufacturing

The conversion of roundwood, or parts of trees, into lumber, veneer, pulp, and paper starts with the primary manufacturing sectors. In the NEFA region, lumber and related solid wood products made in sawmills and paper produced in woodpulp and paper mills are the major primary processing activities. There is also a wood energy sector.

#### Lumber and related wood products

Most forest land in the NEFA region is privately owned by small non-industrial owners who sell their standing trees as “stumpage.” Total sales of stumpage earned by NEFA region landowners are estimated at \$533 million. Estimated sales of these products to sawmills in New Hampshire, Maine, and Vermont (referred to as delivered roundwood) total \$745 million.<sup>(1)</sup>

**Figure 3. WOOD FLOW, NEFA REGION, 1997 (N.H. and N.Y.), 1998 (Vt.), 1999 (Maine)**



For the years data are available, 1,137 million board feet of hardwood sawlogs and 1,797 million board feet of softwood sawlogs were harvested from the NEFA region’s forests, totaling 2,934 million board feet. The NEFA region’s pulpwood harvest was over 4 million cords (figure 3). Cordwood harvested in the NEFA region averages about 1.8 million cords per year. More than 2.4 million green tons of whole tree chips were harvested.

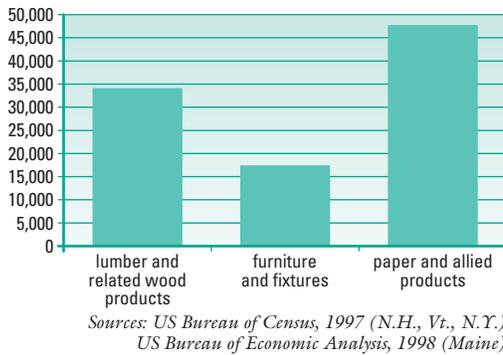
Although the number of sawmills in the NEFA region has decreased in the last few decades, the remaining mills have a production output almost as large as

Although the number of sawmills in the NEFA region has decreased in the last few decades, the remaining mills have a production output almost as large as

four decades ago, due to improved machinery and greater yield from each log. For the years data are available, sawmills in the NEFA region processed 989 million board feet of hardwood sawlogs and 1.3 billion board feet of softwood sawlogs into lumber (figure 3).

Wood flow between the NEFA states and their neighbors is active. Maine and New Hampshire have an important log trade with Canada, comprised of hardwood and softwood sawlogs. Exports of pulpwood between the states are significant, and Maine imports a large amount of softwood pulp from Canada.

**Figure 4. EMPLOYMENT IN FOREST-BASED MANUFACTURING INDUSTRIES, NEFA REGION, 1997 AND 1998**

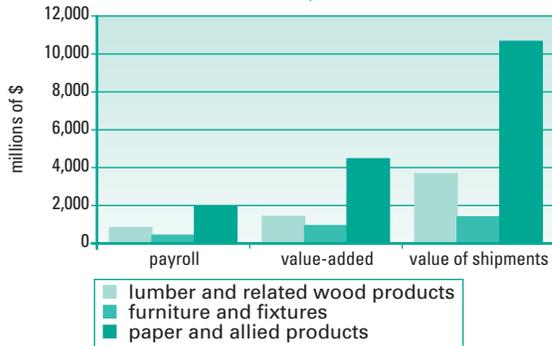


Federal data for this sector indicate employment of 33,998 individuals (figure 4), with a payroll of \$839.4 million. The total value added for Lumber and Related Wood Products was \$1.4 billion and value of shipments was \$3.6 billion (figure 5).

### Wood energy

Wood provides 6% of electrical and heating needs in New Hampshire and Vermont, and about 24% in Maine. There are no figures available for New York. Wood fiber and bark burned for energy are referred to as biomass and come from two sources: sawmill residue and land-clearing waste (hogfuel), and from tops and low quality stems of harvested trees (whole tree chips). The biomass market provides an important outlet for low-grade wood, a material neither suitable nor economical to process for lumber or paper. Revenues from sales of biomass chips for the years data are available totaled \$34.3 million.

**Figure 5. PAYROLL, VALUE-ADDED, AND VALUE OF SHIPMENTS FOR FOREST-BASED INDUSTRIES, NEFA REGION, 1997 AND 1998**



The firewood market has declined significantly since a peak in the early 1980's, but recent increases in home heating fuel prices is contributing to renewed interest in wood as residential fuel, with accompanying increases in demand and price. For the years data are available, 1.7 million cords of firewood were harvested and processed in the NEFA region, contributing \$216 million to the economy.

### Secondary manufacturing

Secondary manufacturing refers to the drying, planing, cutting, and assembly of lumber into parts or finished products. A diversity of trees growing in the NEFA region contributes to a growing secondary industry, composed of dispersed companies that provide jobs and economic stability to mostly rural communities. Flooring, furniture, baseball bats, and tongue depressors are just a sample of items produced in these businesses.

### *Furniture and fixtures*

Federal data for this sector indicate employment of 17,289 individuals (figure 4), with a payroll of \$438 million. The total value added for Furniture & fixtures was \$940 million and value of shipments was \$1.4 billion (figure 5).

### *Pulp and paper manufacturing*

This sector is the largest manufacturing sector in the Maine economy, whose paper-making capacity is second only to the state of Wisconsin. New Hampshire and New York also have several large plants that anchor the pulp and paper industry. Federal data for this sector indicate employment of 47,612 individuals (figure 4), with a payroll of \$1.9 billion. The total value added for paper manufacturing was \$4.4 billion and value of shipments was \$10.6 billion (figure 5).

## **The position of forest-based manufacturing in the NEFA economy**

Forest-based manufacturing is the largest manufacturing sector in Maine, with the largest number of manufacturing facilities and employees, the largest payroll, and the highest value of shipments. The wood-using industry ranks third in value of shipments among New Hampshire's leading manufacturers, where manufacturing is the leading economic sector. Forest-based manufacturing provides about 30% of both payroll and number of employees for all manufacturing industries in Vermont. Employment in forest-based manufacturing accounts for 6% of all manufacturing employment in New York, and ranks sixth in manufacturing employment.

### **Associated forest products**

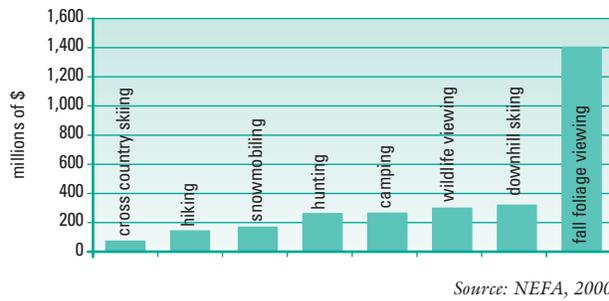
The NEFA region's forests provide other commodities besides timber and pulp. In 1998 sales of maple products totaled \$22 million. Sales of Christmas trees and wreaths totaled \$41 million. A small cottage industry dedicated to the harvesting of greens exists, but there are no data available to quantify the effort. The harvesting of ginseng has become important in New York, where approximately \$6.5 million of ginseng was harvested in 1999.

## **Forest-related Recreation and Tourism**

Many recreation and tourism activities in the NEFA region are linked to the forest, but it is difficult to estimate the contribution made by the forest environment towards recreation and tourism expenditures. The recreation activities selected for this report take place primarily in a forest environment and include camping, hiking, hunting, downhill skiing, cross-country skiing, snowmobiling, fall foliage viewing, and wildlife viewing. Attributing 100% of the economic contribution of these activities to forests is an overstatement, but 50% is an understatement. The author assumed three-quarters (75%) of each activity would not take place if there were no forests. That percentage was raised to 100% for fall foliage viewing.

Participation data in these recreational activities were obtained from various state and federal sources. State total estimates of employment and sales in retail trade and service sectors of the economy were taken from the 1997 Economic Census of the U.S. Bureau of the Census. These were divided into Food and Beverage Stores, Gas Stations, Accommodations, Eating and Drinking Establishments, and Other Retail. Number of activity days were applied to expenditure per activity day per participant by category (food and beverage, gas, etc.) to get the final values.

**Figure 6. FOREST-RELATED RECREATION AND TOURISM EXPENDITURES, NEFA REGION, 1997**

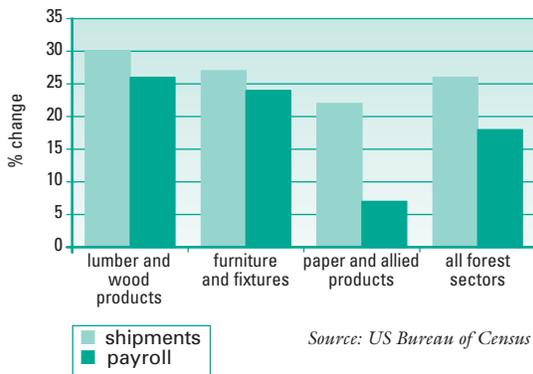


The outdoor recreation activities included in this report directly contribute \$3.6 billion dollars in sales to the NEFA region's economy. The contribution of the forests of the NEFA region to the recreation expenditures is estimated at \$3 billion. Accommodations and the Other category accounted for the largest share of expenditures. Fall foliage viewing makes the largest contribution followed by downhill skiing and wildlife viewing, then camping and hunting (figure 6).

Forest-related recreation and tourism provides employment for 23,284 and generates payrolls of \$300 million. These jobs are important to many rural areas, where there are few alternative employment opportunities.

## Industry Trends

**Figure 7. PERCENT CHANGE IN VALUE OF SHIPMENTS AND PAYROLL, FOREST-BASED INDUSTRIES, NEFA REGION, 1992-1997**



All sectors of the forest-based manufacturing industry saw significant increases in the value of shipments in the NEFA region during 1992-1997 (figure 7). For businesses classified under the SIC codes as Lumber and wood products, primarily sawmills, shipments increased 30% during this time period, equal to the average national growth in this sector. The value of shipments by business engaged in manufacturing Furniture and fixtures, which includes some businesses that do not use wood, increased by 27% during this time period. Paper and allied products, primarily pulp and paper mills, increased the value of their

shipments by 22% across the region. The value of shipments by all forest-based industries, a combination of Lumber, Furniture, and Paper, increased by 26% from 1992-1997.

The payroll of forest-based industries in the NEFA region grew consistently between 1992 and 1997, with all sectors showing an increased payroll of almost 20% (figure 7). Lumber and wood products payroll grew by 26% over this time period, equal to growth in this sector nationally. Payroll for Furniture and fixture manufacturers grew by 24%, also equal to the national average. Payroll in Paper and allied products grew by 7%, significant given a 13% reduction in number of employees during this same time period.

## Conclusion

The economic importance of the NEFA region's forests is significant. In a predominantly rural area, the forest provides important jobs and payroll for thousands of people, and a significant source of income for forest landowners. The sale of forest products adds over \$15.7 billion to the region's economy. Additionally, the forest attracts millions of visitors to the region for recreation and tourism activities, contributing \$2.9 billion. Altogether, the contribution of forest-based manufacturing and forest-related tourism and recreation to the NEFA region economy is more than \$18.6 billion.

(1) Calculations for delivered roundwood (for New Hampshire and Maine) were arrived at by adding the stumpage value of the product (sawlog, pulpwood, or biomass) to estimated operating costs associated with the product. The operating costs were derived from the New Hampshire Forest Products Report, 1999. For Vermont, delivered roundwood was taken from the Vermont Resource Harvest Summary, 1999. There is no value for New York.

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