



Economic Contribution of Minnesota's Forest Products Industry – 2011 edition



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Definitions

Cord – a stack of wood that measures 4x4x8 feet (128 cubic feet) including wood, bark, and empty space.

Forest Products – includes NAICS sectors 321 (Wood Products), 322 (Pulp, Paper, and Paperboard, and 337 (Furniture and Related Products).

Furniture and Related Products – NAICS #337; wood kitchen cabinets and countertops, furniture, window blinds, wood framed mattress box springs, fixtures, and showcases/shelving.

IMPLAN¹ – (IMpact analysis for PLANning) software and data combines classic economic input-output analysis with regional specific social accounting matrices and multiplier models. IMPLAN uses the following definitions for the three measures and three effects of economic impact:

Measures

Value Added – A measure of the impacting industry's contribution to the local community; it includes wages, rents, interest and profits.

Output–Represents the value of local production required to sustain activities.

Employment – Estimates are in terms of full-time and part-time jobs, not in terms of full-time equivalent employees.

Effects

Direct – Initial spending in the study area resulting from the project

Indirect – The additional inter-industry spending from the direct impact

Induced – The impact of additional household expenditure resulting from the direct and indirect impact.

Multipliers

For each economic measure the Social Accounts Matrix (SAM) multipliers are derived through this formula: (Direct + Indirect + Induced)/Direct.

¹ Source: MIG, Inc. (Formerly Minnesota IMPLAN Group, Inc.), PO Box 837, Hudson, WI 54016

NAICS (North American Industrial Classification System) – North American standard used by all government statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to business and the economy.

Primary Forest Industry Sectors – manufacturers and industrial fuelwood consumers that procure and/or utilize wood fiber directly from the forest in roundwood, chip, or equivalent form.

Pulp, Paper, and Paperboard – NAICS #322; wood pulp, paper, paperboard, and paper converting. Converted paper products are made from paper and other materials by various cutting and shaping techniques and coating and laminating activities.

Secondary Forest Industry Sectors – manufacturers that purchase and/or utilize one or more primary forest products in their manufacturing process.

Stumpage Revenue – the value paid to a landowner for the right to harvest and transfer ownership of standing timber.

Wood Products – NAICS #321; lumber, wood windows and doors, millwork, plywood, oriented strand board (OSB), medium density fiberboard (MDF), hardboard, laminated products, veneers, wood containers and pallets, flooring, trusses, prefabricated wood buildings, wood preservation, and specialty products.

Highlights

- The state's forest products manufacturing and related sectors directly contribute \$9.7 billion industry output and \$3 billion value added to the Minnesota economy, employing about 40,370 people with a \$1.8 billion payroll.

Direct economic contribution of Minnesota forest products manufacturing and related sectors.²

<i>IMPLAN Sector</i>	<i>Employment</i>	<i>Output</i>	<i>Value Added</i>
Primary Forest Products Mfg.	5,353	\$2.9 billion	\$0.8 billion
Secondary Forest Products Mfg.	31,743	\$6.8 billion	\$2.2 billion
Forestry and Logging	3,273	\$0.7 billion	\$0.2 billion
Totals^a	40,369	\$9.7 billion	\$3.0 billion

^aTo avoid the appearance of double counting, forestry and logging were discounted from primary manufacturing estimates of output and value added.

- Including direct, indirect, and induced economic effects, Minnesota's forestry-related sectors have a total economic impact of \$17.1 billion industry output, \$6.9 billion value added (contribution to gross state product), and 86,775 jobs.

Total economic impact of Minnesota's forest products manufacturing and related sectors.²

<i>IMPLAN Sector</i>	<i>Employment</i>	<i>Output</i>	<i>Value Added</i>
Primary Forest Products Mfg.	19,153	\$5.2 billion	\$1.9 billion
Secondary Forest Products Mfg.	68,541	\$12.4 billion	\$5.2 billion
Forestry and Logging	6,231	\$1.1 billion	\$0.4 billion
Totals^a	86,775	\$17.1 billion	\$6.9 billion

^aTo avoid the appearance of double counting, indirect and induced effects of forestry, logging, and primary manufacturing were discounted from total manufacturing estimates of employment, output, and value added.

- Minnesota forest landowners receive approximately \$80 million gross stumpage revenue annually for an average 3 million cord timber harvest.³
- For wood harvested in Minnesota, the value added impact of primary manufacturing is \$230 per cord and \$24 per \$1 stumpage value.
- Based on IMPLAN modeling results, Minnesota's forestry-related sectors generate state and local tax receipts of \$493 million in sales, property, and income taxes alone with a total state and local tax impact of \$621 million.
- With 26 percent stumpage market share, the annual economic contribution of timber harvested from DNR administered land to the state's primary forest products manufacturing economy is \$1.3 billion output, \$490 million value added, and 5,050 jobs.

² Derived from Skurla, James A. et. al. 2010. The Economic Impact of Minnesota's Forestry-Related Industries on the State of Minnesota. Duluth, MN: Bureau of Business and Economic Research, University of Minnesota. Available online at URL: https://lsbe.d.umn.edu/departments/bber/bber_projects.php

³ Annual volume harvested live trees not including approximately 200,000 cords residential fuelwood.

Forest Health Depends on Forest Industry

Minnesota's native forests, plantation forests, community forests, and urban trees not only help maintain a healthy environment, clean water, and enhance our quality of life, they also have played a critical role in our state's development, and continue to serve as a cornerstone of the state's economy. Timber harvesting and forest products manufacturing are critical to maintaining healthy and productive forests as well as providing a backdrop for outdoor recreation and tourism. Minnesota's resilient forests are also pivotal for developing sustainable, renewable alternatives to fossil fuels.

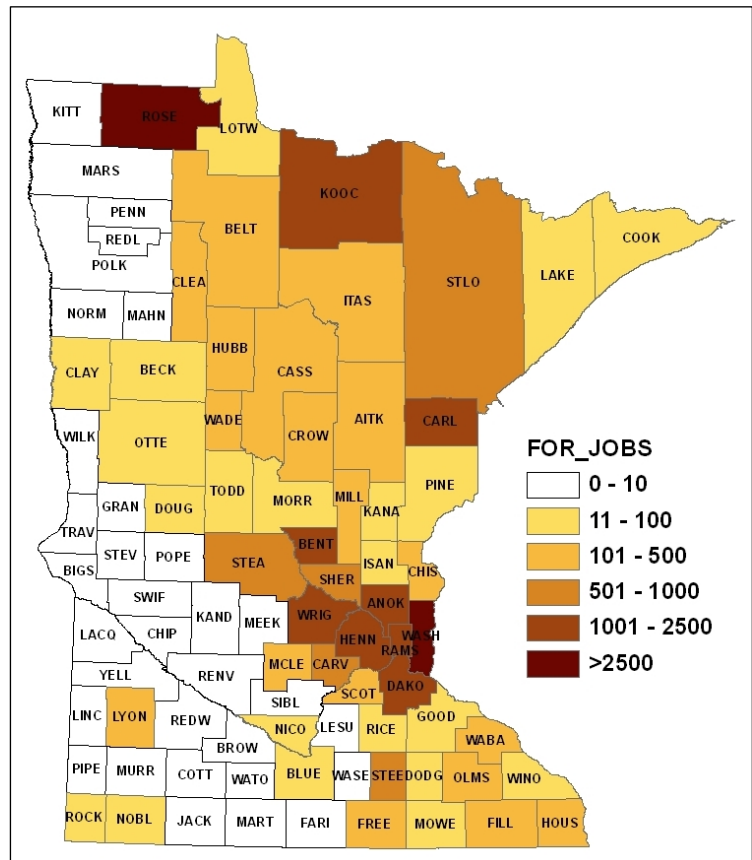
Employment

Forest products manufacturing and related sectors directly support an estimated 40,370 Minnesota jobs. Major employers include: Andersen Windows (Washington County), Marvin Windows (Roseau County), Norcraft Companies (Dakota and Lyon Counties), SAPPI Fine Papers (Carlton County) and Boise, Inc. (Koochiching County).

Top 10 counties forestry-related jobs.⁴

Rank	County	Jobs
1	Washington	3122
2	Roseau	2614
3	Ramsey	2294
4	Dakota	2291
5	Hennepin	2149
6	Anoka	1308
7	Carlton	1257
8	Wright	1151
9	Koochiching	1089
10	Benton	1079

Manufacturing and Energy Facilities		
Pulp and Paper Mills	5	
Recycled Pulp and Paper Mills	3	
Hardboard and Specialty Plants	2	
OSB / Structural Panel Plants	2	
Sawmills	500+	
Specialty Businesses	150	
Secondary Manufacturers	800+	
Renewable Energy	14	
Timber Harvest (million cords)		
Pulpwood	2.2	
Sawlogs and Specialty Products	0.5	
Commercial Fuelwood	0.3	
Residential Fuelwood	0.2	
Total	3.2	
Forest Land (million acres) (% acres)		
Federal	2.9	17%
State	4.4	26%
County and Local Govt.	2.2	13%
Private (includes Tribal)	7.5	44%
Total	17.0	100%



Forestry-related employment by county.

⁴ Compiled from: Minnesota Department of Employment and Economic Development 2008 county employment data and U.S. Census Economic Census 2007, Geographic Series: Non-Employer Statistics data.

Total Employment Effect

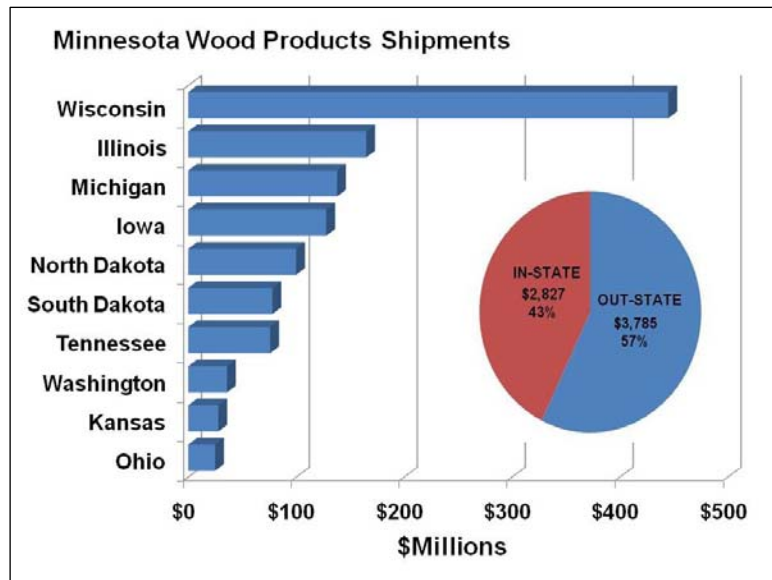
In addition to direct employment, primary and secondary forest products manufacturing supports jobs in related sectors including: wholesale trade (4,214 total jobs), food services and drinking places (3,934 total jobs), commercial logging (2,417 total jobs), real estate establishments (1,977 total jobs), and transport by truck (1,558 total jobs).

Top 25 sectors which primary and secondary forestry industry and related employment supports.

<i>IMPLAN Industry Sector</i>	<i>Direct</i>	<i>Indirect</i>	<i>Induced</i>	<i>Total</i>
Wood windows, doors, and millwork mfg	9,427			9,427
Wood kitchen cabinet and countertops	6,963			6,963
Paperboard container mfg	4,320			4,320
Wholesale trade businesses	0	3,351	863	4,214
Food services and drinking places	0	989	2,945	3,934
Paper mills	3,128			3,128
Commercial logging	0	2,415	2	2,417
Real estate establishments	0	727	1,250	1,977
Transport by truck	0	1,326	232	1,558
Wood container and pallet manufacturing	1,328			1,328
Custom architectural woodwork and millwork manufacturing	1,423			1,423
Coated and laminated paper, packaging paper and plastics film manufacturing	1,369			1,369
Engineered wood member and truss mfg	1,365			1,365
Private hospitals	0	0	1,343	1,343
Offices of physicians, dentists, and other health practitioners	0	0	1,322	1,322
Employment services	0	748	528	1,276
Stationery product manufacturing	1,270			1,270
Reconstituted wood product mfg	1,089			1,089
Services to buildings and dwellings	0	866	310	1,177
Sawmills and wood preservation	752			752
All other paper bag and coated and treated paper manufacturing	1,135			1,135
Showcase, partition, shelving, and locker manufacturing	1,091			1,091
Nursing and residential care facilities	0	0	1,091	1,091
Management of companies and enterprises	0	946	128	1,074
Retail Stores - General merchandise	0	64	968	1,032
<i>As well as additional jobs in another 362 various sectors of the economy . . .</i>				29,700
Total	37,096	21,752	27,928	86,775

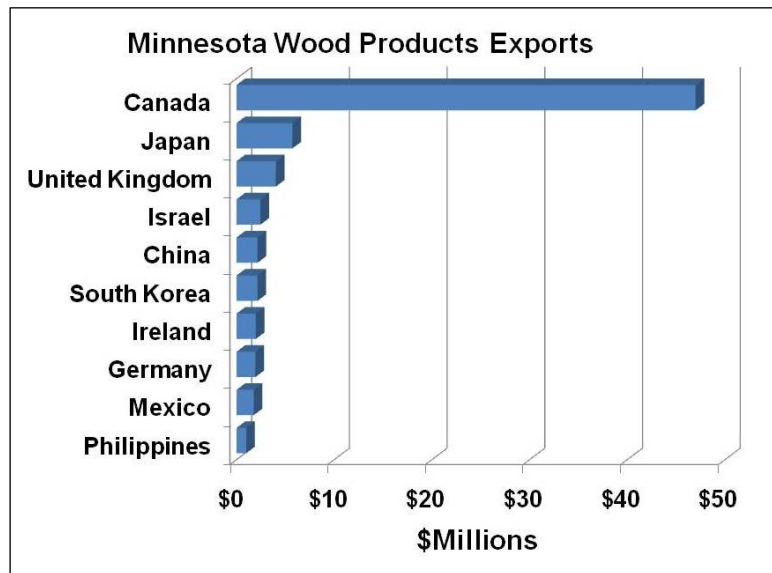
Trade Flows ^{5,6}

Of the total \$6.6 billion manufactured wood products shipments originating in Minnesota, \$2.8 billion or 43 percent is utilized in-state and \$3.8 billion or 57 percent is shipped to other states. Primary U.S. markets for Minnesota manufactured wood products include: Wisconsin, Illinois, Michigan, Iowa, and North Dakota.



Top 10 states importing Minnesota wood products.

Minnesota exports \$76 million manufactured wood products to other countries. Canada is the state's number one trade partner in wood products, importing \$47 million or 62 percent of all Minnesota wood products exports to other countries. However, in 2010, Minnesota imported \$181 million manufactured wood products from Canada, primarily softwood lumber and structural panels such as oriented strand board (OSB) and softwood plywood.

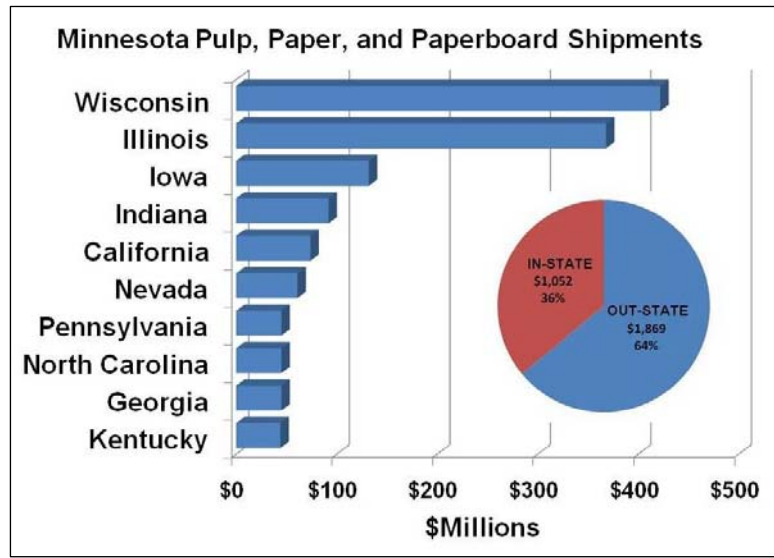


Top 10 countries importing Minnesota wood products.

⁵ Source shipments: U.S. Census Bureau, 2007 Commodity Flow Survey. Geographic Area Series: Shipment Characteristics by Origin State by Destination State by Commodity.

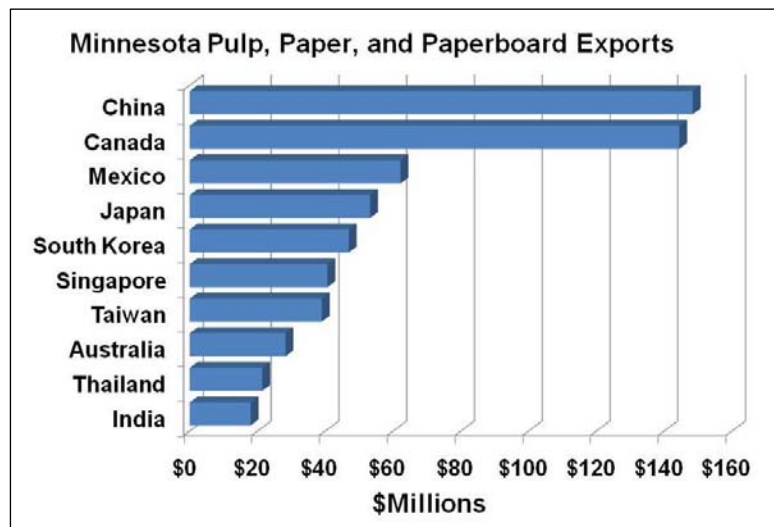
⁶ Source exports: U.S. Department of Commerce, International Trade Administration, Trade Stats Express database, 2010 data.

The value of pulp, paper, and paperboard shipments originating in Minnesota is \$2.9 billion. Of the total, about \$1 billion or 36 percent is utilized in-state and \$1.9 billion or 64 percent is shipped to other states. Primary markets for Minnesota manufactured pulp, paper, and paperboard include: Wisconsin, Illinois, Iowa, Indiana, California, Nevada, Pennsylvania, North Carolina, Georgia, and Kentucky.



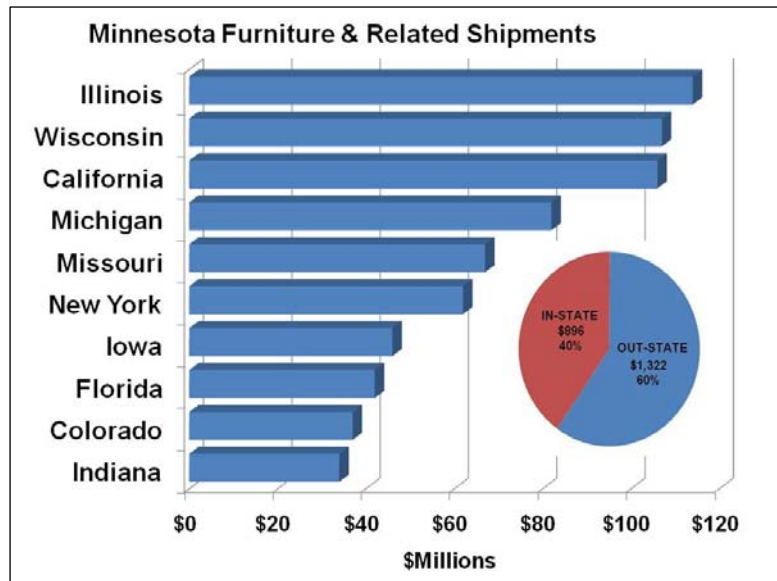
Top 10 states importing Minnesota manufactured paper products.

Minnesota exports \$707 million in pulp, paper, and paperboard products to other countries. China and Canada are the state's top two trade partners in pulp, paper, and paperboard, importing about \$148 million and \$145 million respectively or 21 percent and 20 percent respectively of all Minnesota paper related exports to other countries.



Top 10 countries importing Minnesota paper products.

The value of furniture and related products shipments originating in Minnesota is \$2.2 billion. Of the total, about \$900 million or 40 percent is utilized in-state and \$1.3 billion or 60 percent is shipped to other states. Primary markets for Minnesota manufactured furniture and related products include: Illinois, Wisconsin, California, Michigan, Missouri, New York, Iowa, Florida, Colorado, and Indiana.



Top 10 states importing Minnesota furniture products.

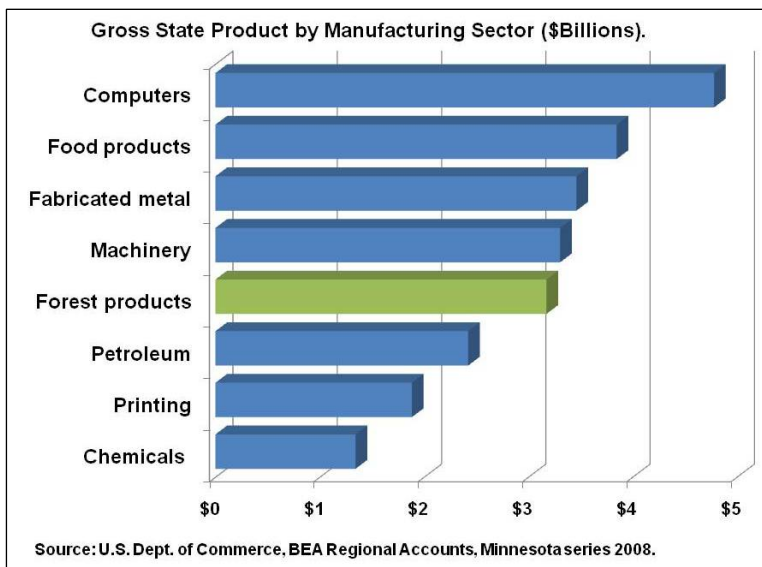
Minnesota exports \$63 million furniture and related products to other countries. Canada is the state's number one trade partner in furniture and related products, importing \$35 million or 55 percent of all Minnesota furniture and related products exports to other countries.



Top 10 countries importing Minnesota furniture products.

Value Added

As measured by value added (contribution to gross state product), forest products manufacturing is the fifth largest manufacturing sector in Minnesota, contributing approximately \$3 billion or 10 percent of the state's manufacturing value added and 1.7 percent of gross state product.⁷ Based on IMPLAN modeling results, the total economic impact of forest products manufacturing is \$6.9 billion value added including direct, indirect, and induced effects.



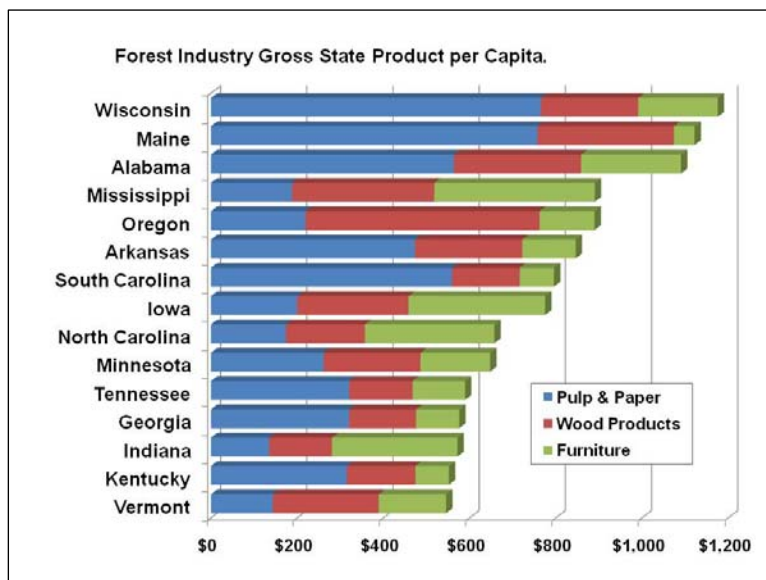
Gross state product by manufacturing sector.

Value Added From Minnesota Timber Harvest

The direct value added contribution of primary forest products manufacturing attributable to the Minnesota timber harvest was \$260 per cord. Including direct, indirect, and induced economic effects, the value added impact of primary forest products manufacturing is \$630 per cord. The total value added impact of primary manufacturing is \$24 per \$1 stumpage value. The total value added impact of primary and secondary manufacturing is \$87 per \$1 stumpage value.

Value Added per Capita⁸

Minnesota is ranked 10th of all states in forest products manufacturing with \$648 value added (contribution to gross state product) per capita comprised of \$261 (40 percent) paper products, \$225 (35 percent) wood products and \$161 (25 percent) furniture and related products. Wisconsin is ranked number one with \$1,176 forest products value added per capita. Maine is ranked number two with \$1,122 value added per capita. Alabama is ranked number three with \$1,091 value added per capita.



Forest products gross state product per capita.

⁷ Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts, Minnesota 2008.

⁸ Derived from: U.S. Census of Manufacturing 2007 and U.S. Census population estimates by state 2007.

State and Local Tax Payments

Based on IMPLAN modeling results, Minnesota's forestry-related sectors generate state and local tax receipts of \$493 million in sales, property, and income taxes with a total state and local tax impact of \$621 million. Of note, IMPLAN tax impact estimates are much higher than direct tax impacts because they include sales taxes generated from spending labor income as well as direct and indirect effects generated from business and occupations tax revenue.

State and local taxes generated by forestry-related sectors.

<i>IMPLAN Description</i>	<i>Employee Compensation</i>	<i>Indirect Business Tax</i>	<i>Households</i>	<i>Corporations</i>
Dividends				\$37,398,390
Soc Ins Tax- Employee Contribution	\$1,974,716			
Soc Ins Tax- Employer Contribution	\$8,495,870			
Indirect Bus Tax: Sales Tax		\$202,151,383		
Indirect Bus Tax: Property Tax		\$136,247,661		
Indirect Bus Tax: Motor Vehicle Lic		\$5,466,657		
Indirect Bus Tax: Severance Tax		\$1,449,264		
Indirect Bus Tax: Other Taxes		\$24,804,628		
Indirect Bus Tax: S/L Non-Taxes		\$25,258,558		
Corporate Profits Tax				\$23,103,363
Personal Tax: Income Tax			\$128,709,352	
Personal Tax: (Fines- Fees)			\$13,822,303	
Personal Tax: Vehicle License			\$6,477,967	
Personal Tax: Property Taxes			\$1,535,282	
Personal Tax: (Fish/Hunt)			\$4,177,554	
Total State and Local Tax	\$10,470,586	\$395,378,147	\$154,722,456	\$60,501,753

Estimated total state and local tax impact all sources = \$621 million.

Primary Forest Products Manufacturing

Primary forest products manufacturers procure and utilize wood fiber directly from the forest while secondary forest products manufacturers purchase and utilize primary forest products in their manufacturing process. Including the direct, indirect, and induced economic effects, primary forest products manufacturing contributes \$5.2 billion output, \$1.9 billion value added (contribution to gross state product), and 19,150 jobs.

Economic contribution of primary forestry-related sectors.

<i>Source: IMPLAN</i>	<i>Direct Effect</i>	<i>Indirect Effect</i>	<i>Induced Effect</i>	<i>Total</i>
Value Added	\$775,963,012	\$645,997,666	\$466,180,783	\$1,888,141,461
Output	\$2,882,984,836	\$1,462,388,551	\$808,954,303	\$5,154,327,690
Employment	5,353	7,340	6,460	19,153

Logging and forestry included in indirect effects.

Forestry and Logging

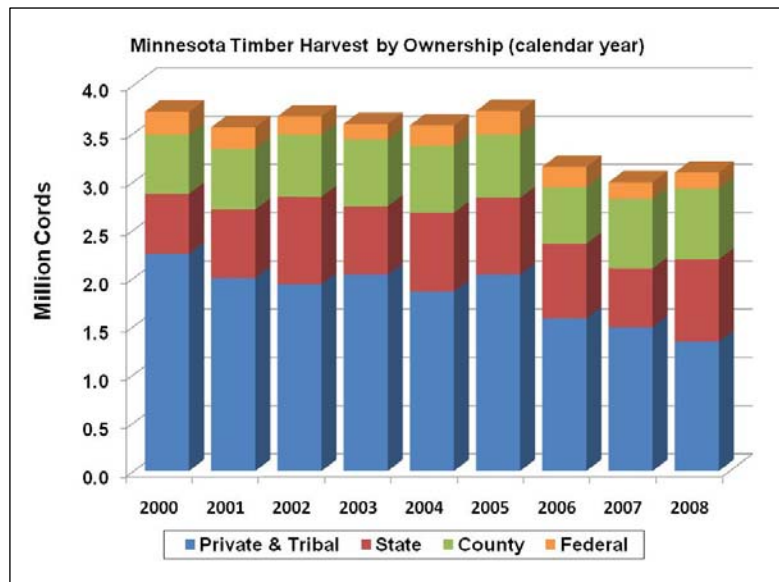
The direct economic impact of forestry and logging is \$658 million output, \$198 million value added, and 3,273 jobs. Including the direct, indirect, and induced economic effects, forestry and logging contributes \$1.1 billion output, \$430 million value added (contribution to gross state product), and 6,230 jobs.

Economic contribution of forestry and logging.

Source: IMPLAN	Direct Effect	Indirect Effect	Induced Effect	Total
Value Added	\$198,168,388	\$105,427,205	\$126,949,948	\$430,545,541
Output	\$658,324,630	\$207,107,752	\$218,988,233	\$1,084,420,615
Employment	3,273	1,162	1,796	6,231

Timber Harvest by Ownership

By calendar year, Minnesota's all-ownership annual timber harvest volume last peaked in 2005 at 3.7 million cords. As a direct result of recession induced mill closures, harvest volume has declined to about 3 million cords not including residential fuelwood. Since 2005, harvest volume from private and tribal ownership decreased from 55 percent of total all-ownership harvest volume to 40 percent of total all-ownership harvest volume while public harvest increased from 45 percent to 60 percent of total all-ownership harvest volume.



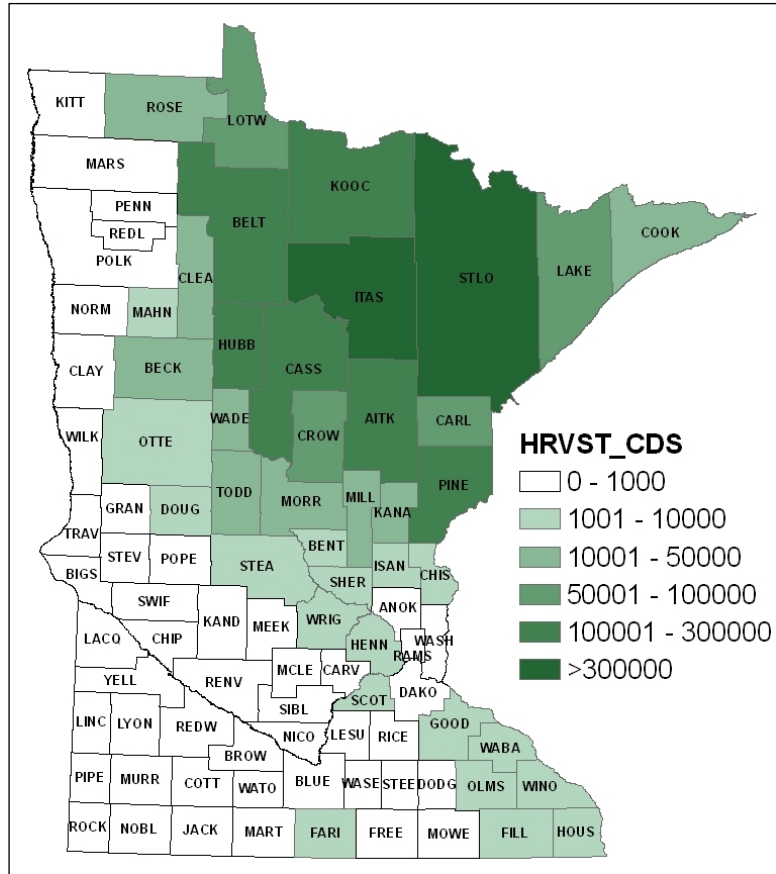
Minnesota annual timber harvest volume by ownership.

Timber Harvest by County ⁹

The top 5 Minnesota counties by harvest volume account for 1.6 million cords annually from all ownerships or 53 percent of the total 3 million cord statewide all-ownership timber harvest. The top 10 counties by harvest volume account for about 2.2 million cords or 73 percent of total statewide all-ownership harvest.

Top 10 timber harvest counties.

Rank	County	Cords
1	St. Louis	612,296
2	Itasca	361,457
3	Koochiching	216,532
4	Beltrami	208,049
5	Cass	194,043
6	Aitkin	178,416
7	Pine	125,800
8	Hubbard	114,842
9	Lake	98,010
10	Carlton	76,715



Minnesota all-owner annual timber harvest volume by county.

Non-Timber Forest Products

Non-timber forest products (NTFP) include: (i) decorative products such as fir boughs, decorative spruce tops, cones, birch bark, and vines; (ii) specialty wood products, e.g., woven baskets and burls; (iii) edible products such as maple syrup, nuts, and mushrooms; and (iv) medicinal and herbal products such as ginseng. The economic impact of NTFPs is substantial. For example, the Minnesota fir bough and wreath business exceeded \$23 million in 2007.¹⁰ NTFPs support a variety of cottage industries in rural communities throughout Minnesota and America.

⁹ Derived from: combined annual harvest volumes as reported from annual USFS pulpwood surveys and periodic Minnesota DNR sawmill, fuelwood, and biomass surveys.

¹⁰ Jacobson, Keith. 2008. Unpublished data. St. Paul, MN: Minnesota DNR, Division of Forestry.

Economic Contribution of Minnesota DNR Forest Management

Minnesota DNR manages 4.96 million acres of dual third-party certified land¹¹ for multiple values, and has overall responsibility for providing wildland fire protection on 45.5 million acres. DNR offers an average 800,000 cords of wood for sale annually, provides technical assistance and cost-share incentives serving 140,000 private family forest-owners holding 5.3 million acres, and produces 5-10 million tree seedlings annually.

- DNR is the single largest land manager in the state, with 4.96 million third-party certified acres managed for multiple public values.
- Since 2008, state managed land has accounted for about 26 percent of annual statewide all-ownership timber harvest, averaging 775,000 cords of a total 3 million cord harvest.
- Based on stumpage market share, the contribution of wood harvested from DNR managed land to the state's primary forest products manufacturing industry is \$1.3 billion output, \$490 million value added (gross state product), and 5,050 jobs.
- Each cord of wood harvested from state land generates an estimated \$34 in state general fund revenue, plus \$14 in local property taxes through primary forest products manufacturing.¹²

Minnesota annual industrial timber harvest volume and stumpage value by ownership.

<i>Ownership</i>	<i>Harvest (Cords)</i>	<i>Market Share (%Cords)</i>	<i>Stumpage Value</i>
Family and Tribal	1,000,000	33%	\$26,623,000
State DNR	775,000	26%	\$20,632,000
County and Local Govt.	720,000	24%	\$19,168,000
Industrial / Corporate	350,000	12%	\$9,318,000
Federal	160,000	5%	\$4,259,000
Totals	3,005,000	100%	\$80,000,000

Three-year average harvest volumes do not include residential fuelwood at 200,000 cords per year. Stumpage values from Minnesota DNR, Public Stumpage Price Review.

Industry Trends

Disclaimer – This following discussion contains statements concerning future results and performance of certain forest products markets that are forward-looking statements. The accuracy of such statements is subject to a number of risks, uncertainties and assumptions that may cause actual results to differ materially from those projected.

Impacts of the “Great” Recession

The Wall Street-triggered national financial crisis, and ensuing recession, took its toll on the state's forest products industry. Four large reconstituted wood products manufacturing plants and many small sawmills closed, with a cumulative loss of over 1,500 jobs, \$430 million industrial

¹¹ Minnesota DNR land is dual certified by the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI).

¹² Estimates based on IMPLAN modeling results for state & local tax impacts of primary forest products manufacturing as follows: \$63.6 million sales taxes, \$39 million income taxes, and \$43.2 million property taxes.

output, \$200 million value-added, and \$14 million state and local tax payments.¹³ However, the state's forest industry sectors as a whole weathered this economic "perfect storm," in part due to a world-class paper industry, diverse wood-products manufacturing base, availability of competitively priced wood fiber from the large publicly managed forest land base, and increasing demands for renewable energy.

Recovery and Rebalancing

In Minnesota, net wood-fiber growth is significantly higher than removals-plus-losses to mortality. This apparent wood fiber surplus facilitates opportunities to maintain and improve forest health, expand wood-using industries, and support quality of life through tax-funded public services. A recent DNR analysis concluded there is potential for sustainable all-ownership harvest levels exceeding 5 million cords per year.¹⁴

Housing-related wood products—

U.S. housing starts declined 75 percent from a peak 2.1 million in 2005 to about 0.5 million in 2009.¹⁵ 2010 closed below expectations at 0.6 million starts as foreclosure rates reached record high levels and net household formations brushed record low levels. The current forecast is for housing starts to slowly gain momentum and top the 1 million mark by 2013.¹⁶



U.S. housing starts forecast through 2015.

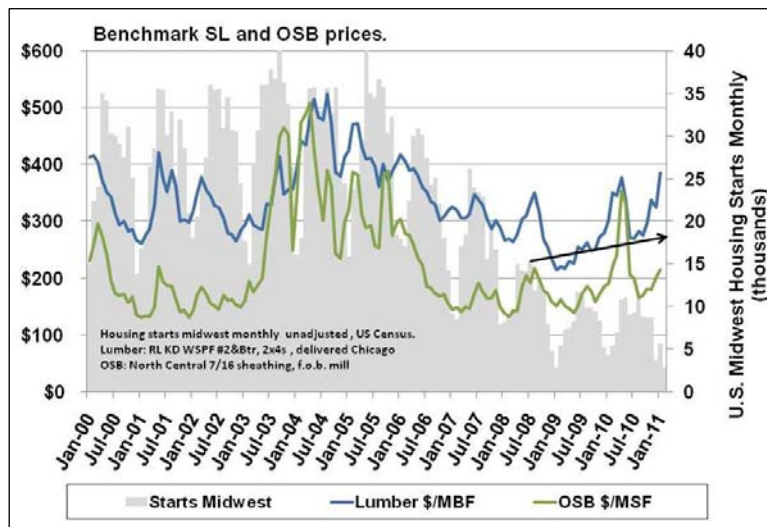
¹³ Derived from: Skurla, James A. et.al. 2008. The economic impact of declines in forestry-related industries in Minnesota, Wisconsin, and a three-state region, 2006. Part I: Targeted impacts – oriented strand board (osb)... Duluth, MN: Bureau of Business and Economic Research, University of Minnesota. Available online at URL: https://lsbe.d.umn.edu/departments/bber/bber_projects.php

¹⁴ Schwalm, Christopher R. 2009. Forest harvest levels in Minnesota: effects of selected forest management practices on sustained timber yields. Staff paper series number 204. St. Paul, MN: University of Minnesota, Department of Forest Resources. Available online at URL: <http://www.forestry.umn.edu/Publications/StaffPaperSeries/index.htm>

¹⁵ Source: U.S. Census Bureau, New Residential Construction, Housing Starts series.

¹⁶ Deckard, Donald L. 2011. Timber Revenue Forecast for Lands Administered by the Minnesota Department of Natural Resources, Fiscal Year 2011, Second Quarter. St. Paul, MN: Minnesota DNR, Division of Forestry.

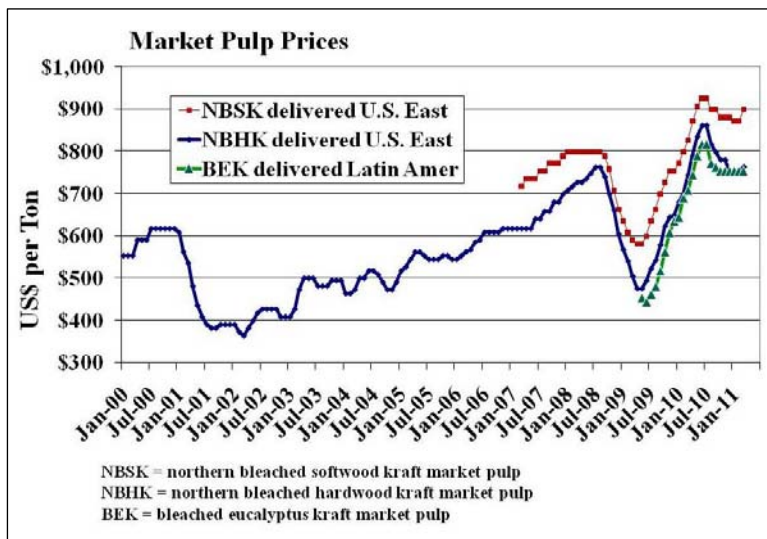
Benchmark softwood lumber and oriented strand board (OSB) prices remain volatile as break-even costs and incremental increases in demand push price spikes. Production capacity and capacity utilization continues to adjust to changing market demand. Overall, the general trend in softwood lumber and OSB demand and pricing has been positive since early 2008.¹⁷



Benchmark softwood lumber and OSB price trends.

Another promising indicator of improving market conditions is that Chinese imports of U.S. logs accelerated in 2010 driven by an increase in Russian log export tariffs, creation of a Chinese middle class, and changes in local building codes allowing more wood frame residential construction. In 2007, the U.S. exported less than 100,000 cubic meters as compared to an estimated 2.4 million cubic meters in 2010. The U.S. is now the third largest softwood log supplier to China, after Russia and New Zealand. The outlook for the state's battered sawmills, structural panel manufacturers, and other housing-market-dependent sectors is slowly improving.

Printing and writing papers—Minnesota's pulp and paper industry is dominated by the manufacture of printing and writing papers and is impacted by global capacity and trade. Primary competitors for U.S. market share are China and Brazil. Pulp and paper demand and pricing were less affected by the recession than housing-related wood products. The initial recessionary shock lasted about 12 months until demand started to rebound. In fact, both softwood and hardwood market pulp contract prices reached record high levels in 2010 with northern bleached softwood kraft (NBSK) market pulp topping \$900 per ton delivered U.S. East and northern bleached hardwood kraft (NBHK) market pulp topping \$850 per ton delivered U.S. East.¹⁸



Market pulp contract delivered prices.

¹⁷ Source: Random Lengths price reporting service.

¹⁸ Source: RISI (Resource Information Systems, Inc.) contract delivered price data.

The outlook for printing and writing papers in North America is flat to slightly positive and depends on anti-dumping tariffs being held in place on heavily subsidized Chinese imports, and previously announced reductions in European capacity.¹⁹ The Upper Midwest is a hub of printing and publishing activity that requires a steady supply of high quality paper.

Renewable energy—Wood-based renewable energy has important economic, climate change, and national security benefits. In 2010, an estimated 150,000 cord equivalents of logging residues plus 300,000 cords (10 percent) of Minnesota's industrial roundwood harvest went to renewable energy markets.²⁰ If the federal renewable fuels standard (RFS2) and states' renewable energy portfolio standards remain unchanged and are to be met, U.S. wood fiber use for renewable energy would potentially increase from 5 percent to >20 percent of total U.S. industrial wood fiber consumption by 2025.

On the horizon: bio-fibers, bio-chemicals, and bio-plastics—chemical cellulose can be manufactured from wood fiber and has many potential applications. The viscose staple fiber (VSF) industry which manufactures textile and non-woven fibers such as rayon is the largest market segment for chemical cellulose. Cellulose acetate flake, used in the manufacture of acetate tow and fibers for cigarette filters, is the second largest application for chemical cellulose. In addition, chemical cellulose can be used to manufacture ethers and microcrystalline cellulose (MCC) used in pharmaceuticals and as a food additive and nitrocellulose used in paints and explosives. New developments are leading to the manufacture of certain types of bio-plastic. For example, PepsiCo has developed a 100 percent bio-based polyethylene terephthalate (PET) plastic bottle. The fully-recyclable bio-plastic material has been produced from switchgrass, pine bark, and corn husks. According to PepsiCo, the molecular structure is identical to petroleum-based PET, resulting in a product that looks, feels, and performs identically to existing PET beverage containers.²¹

¹⁹ Outlook based on synthesis of the following sources: RISI Pulp and Paper International, multiple issues; other trade publications, and International Paper Company 2009 Annual Report.

²⁰ Biomass Utilization Survey, 2009. Unpublished data. St. Paul, MN: Minnesota DNR, Division of Forestry.

²¹ Source: Biorefining Magazine.com, March 22, 2011.

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