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# U.S. Forest Products Annual Market Review and Prospects, 2006–2010

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## Abstract

This paper describes the current state of the U.S. economy and provides general and statistical information on forest products markets in terms of production, trade, consumption, and prices. Market developments are described for sawn softwood, sawn hardwood, softwood log trade, wood-based panels, paper and paperboard, fuelwood, forest product prices, and housing starts. Policy initiatives that can affect domestic markets and international trade in wood products are also discussed in some detail. Data are provided through the end of the year 2008 with estimates for 2009 and forecasts for 2010.

Keywords: production, trade, prices, forest products

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## Executive Summary

As expected, economic activity in the United States exhibited continued weakness during the second quarter of 2009, confirmed by the decline in the annual rate of real gross domestic product (GDP) of -1.5%. Economic activity during the third quarter of 2009 is projected to increase to an annual rate of 2.4%. The rate of growth in the U.S. economy will likely expand at a higher rate in the first half of 2010 than predicted earlier in the year, according to 34 forecasters surveyed by the Federal Reserve Bank of Philadelphia (2009), who also expected economic recovery to begin in the third quarter of 2009. Growth in U.S. real output and inflation

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over the near term looks improved over the fourth quarter of 2008 previous estimates. Forecasters also expect a slight rise in the 2009 unemployment rate, measured on an annual-average basis. Unemployment is expected to rise from 9.3% in the second quarter of 2009 to 9.6% in the third quarter of 2009, for an annual average unemployment rate of 9.2% for 2009. The forecasters see prices rising in the third quarter of 2009 at a slightly lower rate than previously expected, and then declining in the fourth quarter of 2009, staying level into 2010. With increased stability returning to the U.S. credit markets because of the Federal Government economic rescue plan passed in early October 2008 and the American Recovery and Reinvestment Act (ARRA) of 2009 passed in February 2009, the expectation for returning strength in the housing sector has increased. But this expectation may not be realized in 2009 because more mortgage rates will reset on subprime loans, and increased foreclosures are expected. In the near term, the turmoil in the global financial markets is easing but remains volatile and will continue to dominate the economic climate.

Conversion note: All references are in U.S. millions 10<sup>6</sup> and U.S. billions 10<sup>9</sup>.

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# U.S. Forest Products Annual Market Review and Prospects, 2006–2010

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## General Economic and Major Market Trends

The U.S. economy will contract at a slower rate during the third quarter of 2009 compared with the second quarter, before rebounding slightly in the fourth quarter of 2009 and further improving into 2010, according to 43 forecasters surveyed by the Federal Reserve Bank of Philadelphia (August 14, 2009). The forecasters expect real gross domestic product (GDP) to decline at an annual rate of  $-2.6\%$ . The increased pessimism about the labor market accompanies the outlook for weaker output growth. Measured on an annual-average basis, unemployment is expected to rise from  $8.1\%$  in the first quarter of 2009 and  $9.3\%$  in the second quarter to  $9.6\%$  and  $9.9\%$ , respectively, in the third and fourth quarters, for an average of  $9.4\%$  in 2009. Forecasters expect unemployment to further increase to  $9.8\%$  in 2010. This increase in unemployment equates to job losses in the first quarter 2009 of 548,400 per month—311,200 per month in the second quarter and 202,100 per month in the third quarter of 2009. On an annual-average basis, the forecasters expect jobs to decline 328,400 per month in 2009.

Core inflation, as measured by the Consumer Price Index for personal consumption expenditures, is expected to average  $1.4\%$  in 2009 before rising to  $1.8\%$  in 2010. On an annual-average over annual-average basis, inflation in the GDP price index is projected to remain around  $2.2\%$  over the next 5 years (Federal Reserve Bank of Philadelphia 2009).

With a large forest resource and high production and consumption of wood products, the United States continues to play an important role in world forest product markets. But for the past two or more years, the U.S. role on the world stage has diminished as a result of the contraction in the wood segment of America's economy, precipitated by the decline in residential construction and production of building materials. The United States has the world's highest consumption of paper and paperboard (about 87 million metric tons in 2008), which is mostly supplied by domestic production and imports from Canada (AF&PA 2009). Domestic paper and paperboard production is about  $14\%$  below production for the first 7 months of 2009, compared with the same time period a year ago. The U.S. solid wood industry manufactured about 73 million cubic meters of lumber and 21 million cubic meters of structural panel products in 2008. For the first 6 months of 2009, both lumber and structural

panel consumption are below 2008 levels. The U.S. forest products industry's annual harvest was 395 million cubic meters in 2008, below the 440 million cubic meters of harvest in 2007. Domestic roundwood timber harvest in 2009 that supports domestic consumption is expected to be below the 2008 harvest level and is expected to drop further in 2010.

New housing construction, although improved, showed continued weakness during the first quarter of 2009, when 528,000 units were started, and during the second quarter, when 539,000 units were started (NAHB 2009b). Some enthusiasm has returned to the housing sector as the forecast for starts continues to improve into the third quarter of 2009. Total housing starts decreased  $33\%$  from 2007 to 2008 to a seasonally adjusted annual rate of 906,000 units, continuing the overall decline since 2005, when housing starts peaked at 2,068,000 units. All four regions in the United States contributed to the 2008 decrease in housing starts. The largest decrease of  $39\%$  was recorded in the West (196,000 annual rate for 2008), followed by a loss of  $36\%$  in the Midwest (135,000 annual rate for 2008), a loss of  $34\%$  in the South (453,000 annual rate for 2008), and a decrease of  $15\%$  in the Northeast (121,000 annual rate for 2008). A continued decline was also seen in the first quarter of 2009. In March 2009, seasonally adjusted annual rates for housing starts were at 47,000, 102,000, 268,000, and 73,000 for the Northeast, Midwest, South, and West regions, respectively. Additionally, seasonally adjusted annual single-family starts totaled 616,000 in 2008, a  $41\%$  decrease from one year earlier. A continued decline was seen in the first quarter of this year, totaling 78,000, a  $52\%$  decrease from the same period one year earlier. Construction on approximately 152,000 multifamily units at a seasonally adjusted annual rate began in March, 2009—125,000 less units than one year earlier. Both sectors are on course to fall below their 2008 production levels.

In 2008, the total value of all new construction in the United States was \$1,072 billion, nearly  $6\%$  below the July 2008 estimate of \$1,139 billion (DOC 2009). Residential construction was \$357 billion in 2008,  $28\%$  below the \$500 billion of residential construction in 2007. Nonresidential construction was \$715 billion in 2008,  $10\%$  above the \$650 billion in 2007. Public construction in 2008 accounted for nearly  $29\%$  of all construction. In 2009, the National Association of Home Builders (NAHB 2009a) forecast calls

**Table 1—Selected U.S. economic indicators, 2006–2010**

Indicator	Actual <sup>a</sup>			Estimate <sup>b</sup>	Forecast <sup>c</sup>
	2006	2007	2008	2009	2010
Gross domestic product (U.S. billion dollars, 2005)	12,976	13,254	13,312	12,966	13,336
New housing starts (thousand units)	1.812	1.342	0.9	0.572	0.71
Mobile home shipments (thousand units)	118	96	82	50	59
Total residential fixed investment (billion 2005 dollars)	718.2	585	451.1	346.6	405.5
Total nonresidential fixed investment (billion 2005 dollars)	1,453.9	1,544.3	1,569.7	1,302.4	1,079.8
Total industrial production (index 2002 = 100)	109.7	111.3	108.9	97.4	95.2
Furniture and related products (index 2002 = 100)	104.7	101.0	90.4	73.0	75.0
Paper products (index 2002 = 100)	101.6	95.9	92.1	80.0	82.0

<sup>a</sup>Board of Governors of the Federal Reserve System 2009; Council of Economic Advisors 2009; NAHB (National Association of Home Builders) 2009a; U.S. Department of Commerce, Bureau of the Census 2009.

<sup>b</sup>Forest Service estimates based on 2008 actual data.

<sup>c</sup>NAHB 2009b and U.S. Forest Service estimates.

for the housing sector to improve slightly in the fourth quarter, but starts and sales overall for 2009 will still end well below 2008 levels.

Expenditures for residential repair and remodeling remained fairly strong in 2008 at \$214 billion, despite a 6% decline from the record high years of 2006 and 2007. In 2007, the U.S. Department of Commerce stopped collecting residential repair and remodeling data. Estimates for 2008 and 2009 presented here are Forest Service estimates based on private residential construction expenditures (DOC 2009). Expenditures are on track in 2009 to reach \$227 billion, nearly equaling levels reached in 2006. During this same period, new residential construction weakened dramatically and continues to do so into 2009. Since 2000, expenditures for maintenance and repairs to all existing residential properties have averaged about 25% of total expenditures, with the remaining 75% for improvements. Given the unprecedented levels of home foreclosures in the United States in recent years, residential improvements and repairs may be an even bigger part of the economy than usual. Many foreclosed homes need significant maintenance to become marketable. Expectations are for continued and growing investments in existing residential properties.

Two of the major indicators of demand for wood products—furniture and related products and paper products output—were lower during the first 6 months of 2009 relative to 2008. Total industrial output also fell from year-ago levels:

- Industrial production, an important demand determinant for pallet lumber, containerboard, and some grades of paper, decreased 8% over the first 6 months of 2009.

- Furniture and related products, a determinant of high-grade lumber production, decreased by 24% in the first 6 months of 2009, improving on the decline of 2008.
- Paper products output, a determinant of pulpwood and wood residue use, as well as recycled fiber availability and use, decreased during the first 6 months of 2009 compared with the 2008 average. The index (2002 = 100) of paper products output for the first 6 months of 2009 was at 73.0, almost 19% behind the 2008 average.

In summary, the housing sector weakened during 2008, and this weakness has continued into 2009, improving during the second and third quarters. Starts in 2009 will probably fall below year-ago levels as a result of the expected continuation of the housing sector melt-down that is forecast to continue throughout 2009. With the negative rate of growth in GDP, most analysts predict that conditions favorable to the growth of timber markets won't occur until the first half of 2010. Selected U.S. economic indicators are shown in Table 1.

## Timber Products Production, Trade, and Consumption

### Statistics and Prospects

Prospects for wood and wood products are shown in Table 2. All volumes are reported in 1,000 cubic meters. Data for 2009 are preliminary estimates; data for 2010 are forecasts.

### U.S. Wood Product Market Shares

Annual U.S. solid wood products production and foreign trade data are collected annually by governmental

**Table 2—Prospects and statistics for wood and wood products, 2008–2010 ( $\times 10^3 \text{m}^3$ )<sup>a</sup>**

<b>Sawn softwood</b>				<b>Oriented strandboard (OSB)</b>			
	2008 <sup>b</sup>	2009	2010		2008 <sup>b</sup>	2009	2010
Production	49,600	39,680	41,660	Production	11,508	8,140	9,530
Imports	29,701	20,510	21,330	Imports	3,244	2,700	3,820
Exports	1,024	2,080	2,160	Exports	435	300	430
Consumption	78,277	58,110	60,830	Consumption	14,318	10,540	12,920
<b>Coniferous logs</b>				<b>Particleboard</b>			
	2008 <sup>b</sup>	2009	2010		2008 <sup>b</sup>	2009	2010
Production	137,105	125,900	125,000	Production	5,161	4,910	4,920
Imports	1,562	1,500	1,500	Imports	797	690	690
Exports	6,997	6,560	6,620	Exports	354	390	380
Consumption	131,670	120,840	119,880	Consumption	5,604	5,210	5,230
<b>Sawn hardwood</b>				<b>Medium-density fiberboard (MDF)</b>			
	2008 <sup>b</sup>	2009	2010		2008 <sup>b</sup>	2009	2010
Production	23,454	22,200	21,910	Production	3,021	2,910	2,900
Imports	852	900	990	Imports	821	800	790
Exports	2,229	2,100	2,200	Exports	452	430	420
Consumption	22,077	21,000	20,700	Consumption	3,390	3,280	3,270
<b>Hardwood logs</b>				<b>Insulation board</b>			
	2008 <sup>b</sup>	2009	2010		2008 <sup>b</sup>	2009	2010
Production	52,236	51,240	51,090	Production	2,755	2,600	2,600
Imports	105	120	130	Imports	356	360	360
Exports	2,290	2,260	2,200	Exports	175	180	180
Consumption	50,051	49,100	49,020	Consumption	2,936	2,780	2,780
<b>Coniferous plywood</b>				<b>Roundwood pulpwood</b>			
	2008 <sup>b</sup>	2009	2010		2008 <sup>b</sup>	2009	2010
Production	9,060	7,850	8,230	Production	139,268	115,650	120,080
Imports	664	490	900	Imports	701	700	710
Exports	542	570	650	Exports	2,680	2,680	2,700
Consumption	9,182	7,770	8,480	Consumption	137,289	113,670	118,090
<b>Non-coniferous plywood</b>				<b>Hardboard</b>			
	2008 <sup>b</sup>	2009	2010		2008 <sup>b</sup>	2009	2010
Production	1,218	1,200	1,100	Production	860	850	850
Imports	2,389	2,210	2,100	Imports	709	750	780
Exports	180	180	150	Exports	332	310	360
Consumption	3,427	3,230	3,050	Consumption	1,237	1,290	1,270

<sup>a</sup>All volumes are reported in 1,000 cubic meters. Figures for 2009 are U.S. Forest Service estimates, and figures for 2010 are U.S. Forest Service forecasts.

<sup>b</sup>Revised from 2009.

agencies and industry associations. This information provides an overview of how robust the wood-using sectors of the U.S. economy are and how their performance has changed over time (Howard 2009). But it does not provide detailed information specific to individual end-use markets needed to further evaluate changing patterns of consumption. End-use markets of interest include new single family, multifamily, and mobile home construction; repair and remodeling of existing residential structures, low-rise nonresidential building, and other types of nonresidential construction; furniture and other manufactured products production; and packaging and shipping. These end-use markets typically account for 80% to 90% of all solid wood products consumption. Market share estimates presented here are based on findings from limited public and private research reports that were related to more readily available, annual

economic indicator data specific to each end-use market. Consumption was then balanced over all end uses, and market shares developed. These estimates provide a consistent, reliable look at solid wood products markets in the United States (McKeever 2009).

Table 3 presents annual balanced wood products consumption by end use for sawn wood, structural panels, and non-structural panels for the period 2005–2008, with preliminary estimates for 2009 and forecasts for 2010. Figure 1 shows market shares for all solid wood products combined for the same time period.

### Sawn Softwood

Housing and other construction markets started off weaker in 2009 and that weakness has continued into the third

**Table 3—Percentage of wood product market shares in the United States by end-use, 2005–2010**

Year	Residential			Nonresidential				Manufacturing			Total				
	Single family	Multi family	Mobile homes	Repair/remodel	Buildings	Other	Total	Total construction	Furniture	Other	Total	Packaging/shipping	end-uses <sup>a</sup>	Other uses	
<b>Sawn softwood</b>															
2005	41	3	2	46	27	5	1	5	79	2	3	5	5	88	12
2006	39	4	2	45	29	5	1	6	80	2	3	5	6	91	9
2007	32	4	2	38	32	8	1	10	80	2	3	5	6	91	9
2008	24	5	2	31	38	11	2	13	81	3	4	6	7	95	5
2009	11	4	1	16	43	10	2	12	71	3	4	6	7	85	15
2010	13	5	1	19	41	10	2	11	72	2	4	6	7	85	15
<b>Sawn hardwood</b>															
2005	11	1	0	12	7	4	7	11	30	13	9	22	44	97	3
2006	12	1	0	13	8	4	8	12	33	11	9	21	45	98	2
2007	9	1	0	10	8	4	7	11	29	11	9	20	45	94	6
2008	6	1	0	7	8	5	9	13	28	11	10	21	45	94	6
2009	3	1	0	4	9	5	8	13	26	11	10	22	47	94	6
2010	4	1	0	5	9	5	8	13	27	11	11	22	46	94	6
<b>Total sawnwood</b>															
2005	37	3	2	41	24	4	2	6	72	4	4	7	11	90	10
2006	35	3	1	40	26	5	2	7	73	4	4	7	12	92	8
2007	28	3	1	33	28	7	2	10	71	4	4	8	13	92	8
2008	21	4	1	26	32	10	3	13	72	4	5	9	14	95	5
2009	9	4	1	14	36	9	3	12	63	4	5	9	15	86	14
2010	11	5	1	17	35	9	3	12	64	4	5	9	14	86	14
<b>Coniferous plywood<sup>b</sup></b>															
2005	31	3	1	35	28	10	2	12	75	5	9	14	4	93	7
2006	28	3	1	32	31	13	2	15	78	4	11	15	5	98	2
2007	23	4	1	28	30	12	2	14	71	5	11	15	5	92	8
2008	17	4	1	22	34	16	2	19	74	5	12	18	6	98	2
2009	8	4	1	12	38	15	2	18	67	5	13	18	6	92	8
2010	9	5	1	15	37	15	2	17	69	5	13	18	6	93	7
<b>Oriented strandboard (OSB)<sup>b</sup></b>															
2005	64	4	4	72	7	6	1	7	85	0	1	1	0	86	14
2006	61	4	4	69	8	7	1	8	85	0	0	1	0	86	14
2007	55	5	4	64	8	12	1	13	85	0	0	1	0	86	14
2008	45	7	4	56	11	17	2	19	85	0	1	1	0	86	14
2009	29	9	4	42	17	23	3	26	84	0	1	1	1	86	14
2010	32	10	4	47	15	20	2	23	85	0	1	1	1	86	14
<b>Total, structural panels</b>															
2005	51	4	3	57	15	8	1	9	81	2	4	6	2	89	11
2006	49	4	3	56	16	9	1	11	83	2	4	6	2	91	9
2007	43	5	3	50	16	12	1	14	80	2	4	6	2	89	11
2008	34	6	3	42	20	17	2	19	81	2	5	8	3	91	9
2009	21	7	3	30	25	20	2	23	78	2	6	8	3	88	12
2010	23	8	3	34	24	18	2	20	78	2	6	8	3	89	11
<b>Nonstructural panels<sup>c</sup></b>															
2005	16	2	1	19	13	8	0	8	40	27	17	43	1	84	16
2006	14	2	1	16	14	10	0	10	40	24	18	42	1	84	16
2007	10	1	1	12	12	10	0	10	34	32	17	49	1	84	16
2008	7	2	1	9	12	11	1	12	33	33	18	50	1	84	16
2009	3	2	0	5	14	11	1	12	30	34	19	53	1	84	16
2010	4	2	1	6	14	11	1	11	31	32	19	51	1	84	16

<sup>a</sup>Data may not add to totals because of rounding.<sup>b</sup>Engineered wood products were converted to their equivalent volumes of sawnwood and structural panels.<sup>c</sup>Includes particleboard, medium-density fiberboard, insulation board, hardboard, and non-coniferous plywood.

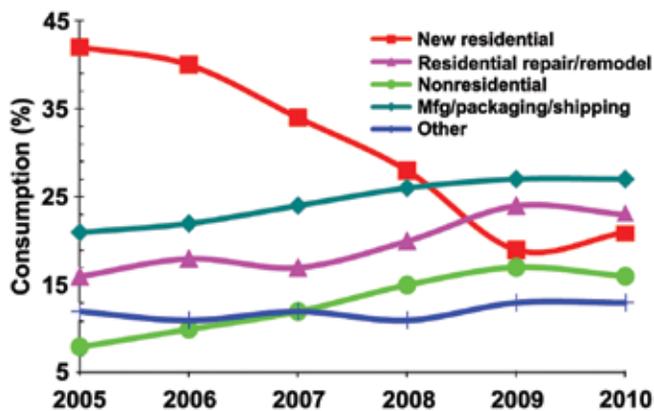


Figure 1. Solid wood products consumption market shares, 2005–2010.

quarter 2009. The housing market is likely to finish the year at a much lower level than that recorded a year ago. The decline in the housing sector, as evidenced by its overall falling market share, continues to have a negative effect on softwood lumber consumption (Fig. 1, Table 3). According to the Western Wood Products Association (WWPA), during the first 6 months of 2009, softwood lumber consumption decreased 28.6% from the same period last year, and shipments of softwood lumber from western mills decreased 25% during the first 6 months of 2009 compared with the same period in 2008 (WWPA 2009). Production decreased during this period in the West as well as in the South, 28% and 25%, respectively. Apparent consumption for the first 6 months of 2009 was 26.7 million cubic meters, 28.6% below the 37.4 million cubic meters for the first 6 months of 2008. As predicted, the U.S. housing construction industry declined over the second half of 2008 and into 2009. Timber production, therefore, could also continue to fall in 2009 after declining in 2008. Softwood production through the first 6 months of 2009 was 19.6 million cubic meters, which was down 26.1% when compared with the first 6 months of 2008, when 26.5 million cubic meters of sawn softwood were produced. Softwood consumption through the first 6 months of 2009 was 26.7 million cubic meters, which was down 28.6% when compared with the first 6 months of 2008. Production of sawn softwood for 2009 is forecast to fall below 2008 levels, and then rebound with a gradual increase in 2010.

Sawn softwood imports decreased 35.9% during the first 6 months of 2009 relative to the same time period a year ago. The volume of Canadian imports, which constituted 90% of all sawn softwood imports, also decreased by 34.1% over this period. Total sawn softwood imports were 16 million cubic meters in 2008, a decrease of 46% from 2007.

During the first 6 months of 2009, U.S. sawn softwood exports decreased 13.8% compared with exports for the same period in 2008. Exports to Canada decreased by 34.5%, while exports to Japan increased 33.1% and exports to Mexico fell 3.8%.

## Sawn Hardwood

Sawn hardwood production decreased by 18.2% to 23.5 million cubic meters in 2008. Imports in 2008 decreased by 30.5% compared with 2007. Given the decrease in U.S. production, volatile trade figures, and a declining housing market, apparent consumption for 2009 is forecast to fall below the 2008 volume.

## Softwood Log Trade

Softwood log exports to Japan decreased 19.6% over the first 6 months of 2009 when compared with exports in the same period of 2008, while softwood log exports to Canada increased by 13.3% in the same period. Softwood log exports to all other countries decreased by 16.7% during the first 6 months of 2009 when compared with the same time period of one year ago. This level remains well below export levels throughout the 1990s. Softwood log imports decreased by 41.2% over the first 6 months of 2009 compared with a year earlier. During 2008, timber harvest fell to a lower level than that in previous years, and the forecast calls for continued decline in harvest in 2009. (Softwood log exports through the first 6 months of 2009 were down 7.2% when compared with the first 6 months of 2008. Exports to Japan dropped by 19.6% during this same time period.)

## Hardwood Log Trade

Hardwood log exports decreased slightly and imports doubled during 2008 compared with 2007. Exports decreased 21.7% and imports increased 104.1% compared with this period in 2007. Canada traditionally provides about 95% of U.S. imports. Hardwood log exports were down 22.5% through the first 6 months of 2009 when compared with 2008; hardwood log imports were down 49.97% through the first 6 months of 2009 when compared with 2008.

## Pulpwood

Roundwood production for pulp and wood-based panel mills was 134 million cubic meters in 2007, down slightly from 2006. As expected, roundwood pulpwood consumption continued to decrease during 2008. Pulpwood supplied from residue continued to decrease relative to roundwood. The roundwood portion of pulpwood was 127 million cubic meters in 2008, a 5% decrease from 2007 (Howard 2009). Trade patterns continue to have a significant impact on paper and paperboard production and have affected pulpwood use, but the significant decline in U.S. paper and board production and consumption that occurred over the past year was largely due to a downturn in consumer spending associated with the credit crisis and declining home values. Exports of paper, paperboard, and converted products increased by 6.1% to 14.1 million metric tons, while imports of paper and paperboard decreased by 10.4% to 12.8 million metric tons in 2008. Paper and paperboard production decreased by 4.6% to 79.1 thousand metric tons in 2008. The production of paper and paperboard in 2009 is forecast

to be 10% below 2008 production as reflected in the annual year-to-date rate for June 2009 of 75.8 million tons, which is down 17.7% from 2008, when paper and paperboard were produced at a level of 81 million metric tons. Paper and paperboard imports were at an annual rate in June of 10.1 million metric tons, which is down 28.5% from last year.

### Structural Panels

Structural panel production in 2008 was 13.9% below that of 2007, while consumption was 22% below consumption in 2007 (APA 2009). Structural panel consumption at the end of the second quarter of 2009 was 8.8 million cubic meters, or 30% below the second quarter of 2007. Overall, structural panel consumption is expected to drop to 18.3 million cubic meters in 2009 before beginning to increase in 2010 (Adair 2009). Structural panel market shares were negatively affected by the current economic downturn. New 2005 residential construction captured 57% of all structural panel consumption, fell to 42% in 2008, and is expected to fall further in 2009 (Table 3).

In 2008, 11.5 million cubic meters of oriented strandboard (OSB) were produced, compared with 13.1 million cubic meters in 2007 (Table 2). OSB consumption totaled 14.3 million cubic meters in 2008 and constituted 60% of the structural panel market (Table 3). This represented a 4% share decrease from 2007. Consumption is expected to further decline in 2009. At end of the second quarter 2009, consumption was 0.7 million cubic meters, nearly 10% below the second quarter of 2008. The anticipated economic recovery and increasing residential construction is expected to increase OSB consumption in 2010 to nearly 13 million cubic meters.

Softwood plywood production was 9.1 million cubic meters in 2008 (Table 2) (APA 2009). This level of production was 16.4% below 2007. Softwood plywood production at the end of the second quarter in 2009 was 3.8 million cubic meters, which is 21.8% less when compared with the numbers at the end of second quarter in 2008. The volume of softwood plywood production fell throughout the 1990s, and the decline continued through 2008. Softwood plywood imports decreased in 2008 by 30.2% compared with 2007 data, while softwood plywood exports increased in 2008 by 12.3%. Plywood exports to Canada increased by 22.1% during 2008 compared with a year earlier, and plywood imports from Canada decreased 43.3%. Softwood plywood consumption was 0.7 million cubic meters at the end of the second quarter 2009, which was 20.9% below last year. Apparent consumption of softwood plywood is expected to decrease in 2009 and then increase in 2010.

### Hardwood Plywood

Hardwood plywood production, including core material such as softwood plywood and OSB, was estimated at 1.3 million cubic meters in 2008, down from 2007 production. Hardwood plywood imports decreased 30% in 2008,

falling to 2.4 million cubic meters when compared with 2007. Hardwood plywood exports rose in 2008, increasing 12.8% to 179 thousand cubic meters. Production and consumption of hardwood plywood in 2009 and 2010 is forecast to steadily fall to well below 2008 levels (Table 2). These declines are a result of falling total industrial production and furniture and related products indexes (Table 1), coupled with the U.S. housing market collapse.

### Particleboard and Medium Density Fiberboard

Information from the Composite Panel Association (CPA 2009) indicates that particleboard and medium density fiberboard (MDF) production decreased during 2008. Particleboard production was 5.2 million cubic meters, a decrease of 18%, and MDF production was 3.0 million cubic meters, a decrease of 9.6% (Table 2). During 2008, particleboard imports decreased by 21.3%, while MDF imports decreased by 28.0% on a volume basis compared with 2007. Particleboard and MDF exports increased by 10.5% and 28.1%, respectively. Consumption is forecast to decline by about 5% in 2009 and then increase slightly in 2010. Particleboard and MDF account for well over one-half of all nonstructural panels consumed in the United States. Although they aren't a large component in residential construction, their market share fell by nearly half between 2006 and 2008 (Table 3). All end uses increased their market shares for nonstructural panels during this time period.

### Hardboard

Based on data from the Composite Panel Association (CPA 2009), 860 thousand cubic meters of hardboard were produced in 2008; this level of production is expected to decline slightly in 2009. Hardboard imports and exports are expected to remain flat over the next 2 years.

### Insulation Board

Information from the American Forest & Paper Association (AF&PA 2009) showed that 2.7 million cubic meters of insulation board were produced in 2008, unchanged from 2007. Production of insulation board has been flat for several years, resulting in a stable level of apparent annual consumption of about 3.0 million cubic meters.

### Fuelwood

Using data from a 2008 Department of Energy survey (DOE 2008c) and adjusting for the 2008 winter weather and increasing trend in fuelwood use per household, fuelwood consumption was estimated to be 42.8 million cubic meters in 2008—a decrease of 6.7% from 2007. Households use most fuelwood for heating and aesthetic enjoyment. Industry uses mill residue rather than roundwood for fuel. A small portion of roundwood fuelwood is used for electric power production. Use for electric power is limited by the low cost of coal and natural gas alternatives. Fuelwood consumption for 2007 was above the level for 2006, and the forecast still calls for increased fuelwood consumption through 2009.

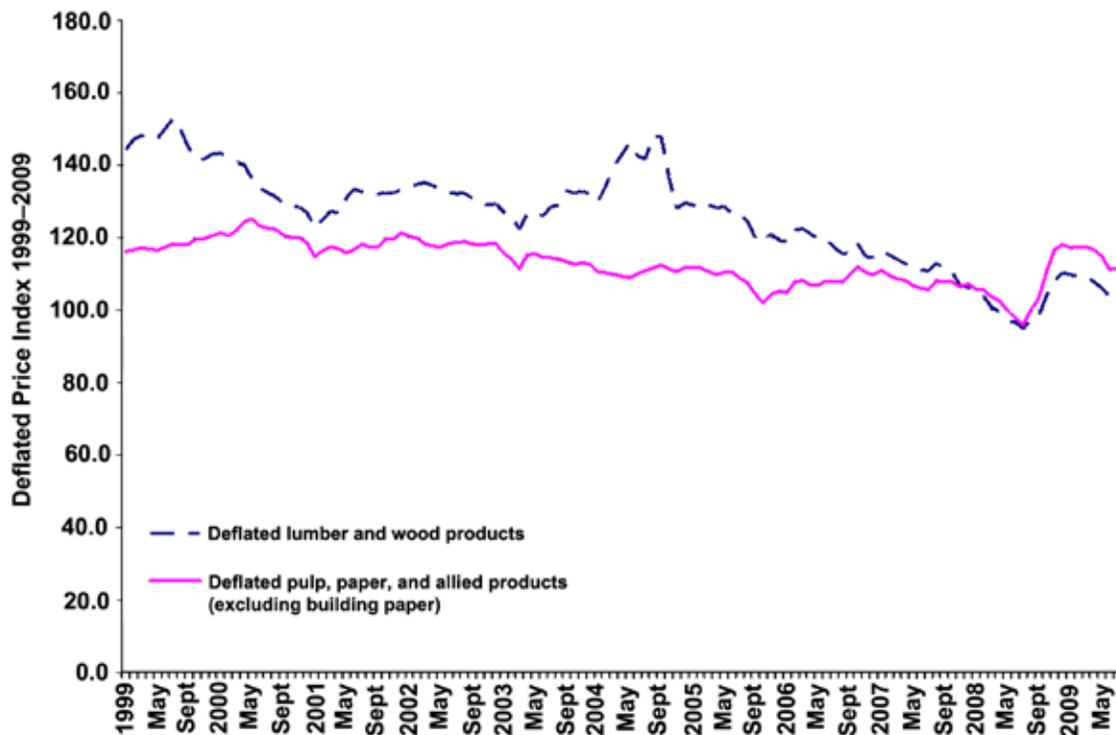


Figure 2. Wholesale prices of forest products, 1999–2009.

Renewable fuel standards and other biomass-related energy policies are likely to increase the growth rate for fuelwood and other forms of wood energy (DOE 2008d).

### Forest Products Prices

Trends in the wholesale price of forest products are different across two broad categories: lumber and wood products (such as lumber and wood-based panels) and pulp and paper products (Fig. 2). Throughout the late 1990s, the producer price of lumber and wood products as reflected by the producer price index (PPI) continued to fluctuate around a level reached by the mid-1990s before peaking during the second half of 1999 (DOL 2009). The PPI for lumber and wood products continued to decrease during the first quarter of 2008, but rose and peaked in the third quarter, and then declined again in the fourth quarter and into the first quarter of 2009. Changes in the price of softwood lumber and a depressed lumber market accounted for much of this change and most of the volatility in the index. In 1999, the deflated composite price index reached an all-time high (at a level more than 50% higher than that of the base year, 1982), followed immediately by a sustained decline that continued throughout 2000 and into 2009. The PPI reached its lowest level in 5 years during this period. In spite of these sustained low prices, U.S. demand for lumber and wood products during 2000 and into 2005 remained near-record levels. But the current situation in the housing market could cause record-low price levels if the downturn persists. In contrast, the PPI of prices in the pulp and paper sector has exhibited considerably less short-term volatility. In deflated terms, the

composite index began 2008 with a flat-to-declining trend, before undergoing an upturn in the third quarter of 2008 that became flat in the first quarter of 2009.

## Policy Initiatives

### Climate Change

The United States has taken a leading role in addressing the issue of climate change and is on track to cut greenhouse gas intensity some 18% by 2012. Greenhouse gas intensity—the amount emitted per unit of economic activity—declined by 2.5% in 2005 and by 3.7% in 2006 (DOE 2008a). During 2001 through 2006, the U.S. Government will have devoted more than \$29 billion to climate programs, more than any other nation. During his inaugural address in January 2009, President Obama announced the continuation of the Advanced Energy Initiative, which proposes a 22% increase in funding for clean energy technology research, supporting new biofuels such as cellulosic ethanol and biodiesel. The United States is also leading the global effort to promote clean development, enhance energy security, and reduce harmful air pollution worldwide. Multilaterally, the United States provides the most funding of any country for activities under the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC 2008).

The 2002 Farm Bill provided nearly \$40 billion in funding over 10 years for conservation on working lands, enabling the Federal Government (largely through the U.S. Department of Agriculture) to provide targeted incentives

to encourage wider use of land management practices that remove carbon from the atmosphere or reduce emissions of greenhouse gases. The 2007 Farm Bill added additional funding, \$7.8 billion over 10 years above the current conservation baseline.

The U.S. Federal Government supports an extensive array of scientific and technological research on climate change in addition to domestic and international actions to address greenhouse gas emissions and carbon sequestration. The 2003 Strategic Plan for the United States Climate Change Science Program identified 21 synthesis and assessment products that represent principal responses to the top-priority research, observation, and decision support needs of society. The Climate Change Science Program (CCSP) Synthesis and Assessment Product 4.3 (SAP 4.3) (CCSP 2008) will address the effects of climate change on agriculture, land resources, water resources, and biodiversity. These areas are addressed under the ecosystems, land use, and water research elements of the CCSP. One of the primary goals of these research elements is to enhance understanding and ability to estimate impacts of future climate change on these systems.

### Greenhouse Gases

Forest ecosystems and forest products represent a significant carbon dioxide sink in the United States. Over 90% of the sequestration in agriculture and forests occurs in the forest sector, with an additional 7% sequestered in urban trees. Total carbon stocks in forest ecosystems of the conterminous United States are estimated at 184,800 TgCO<sub>2</sub> eq. The net amount of carbon stored in forest ecosystems in the conterminous United States increased by an estimated 547 TgCO<sub>2</sub> eq. This estimate does not include increases in biomass harvested from a portion of U.S. forests, used largely as lumber, panels, paper, and fuelwood. On April 17, 2006, the U.S. Department of Energy (DOE) 2008b issued revised guidelines for the voluntary reporting of greenhouse gas emissions, sequestration, and reductions known as the 1605(b) program. The program was implemented by DOE during 2007. The initial program guidelines were issued in 1994, and over 200 utilities, industries, institutions, and other entities now report annually. The U.S. Department of Agriculture provided the technical methods for estimating greenhouse gas emissions, carbon sequestration, and emission reductions on farm, forest, and grazing lands. The revised guidelines include “state-of-the-science” guidance and tools for estimating emissions from agricultural, forestry, and conservation activities important for carbon sequestration efforts, as well as from other sources of greenhouse gases. As noted in the Forest Appendix of the revised guidelines, international agreements recognize forestry activities as one way to sequester carbon, and thus mitigate the increase of carbon dioxide in the atmosphere; this may slow possible climate-change effects. The Forest Appendix can be found at the following URL: [http://www.usda.gov/oce/global\\_change/Forestryappendix.pdf](http://www.usda.gov/oce/global_change/Forestryappendix.pdf).

Carbon is sequestered in growing trees, principally as wood in the tree bole. However, accrual in forest ecosystems also depends on the accumulation of carbon in dead wood, litter, and soil organic matter. When wood is harvested and removed from the forest, not all of the carbon flows immediately to the atmosphere. In fact, the portion of harvested carbon sequestered in long-lasting wood products may not be released to the atmosphere for years or even decades. If carbon remaining in harvested wood products is not part of the accounting system, calculation of the change in carbon stock for the forest area that is harvested will incorrectly indicate that all the harvested carbon is released to the atmosphere immediately. Failing to account for carbon in wood products significantly overestimates emissions to the atmosphere in the year in which the harvest occurs. The Forest Appendix provides tables of estimates of forest carbon stock for common forest types within each of 10 U.S. regions. Six distinct forest ecosystem carbon pools are listed: live trees, standing dead trees, understory vegetation, down dead wood, forest floor, and soil organic carbon.

### Bioenergy

Several recent key laws, Executive Orders, and regulations are helping to drive bioenergy production and use in the United States: Presidential Executive Order 13101, Greening the Government Through Recycling and Waste Prevention (which requires Federal agencies to give preference in their procurement and grant programs to the purchase of specific recycled content products); Presidential Executive Order 13134, Developing and Promoting Biobased Products and Bioenergy (set a goal of tripling the U.S. use of bioenergy and bioproducts by 2010.); the Biomass Research and Development Act of 2000, (Title III of the Agricultural Risk Protection Act of 2000, P.L.106-224); and Section 9002 of the Farm Security and Rural Investment Act of 2002 (FSRIA). The FSRIA is the first farm legislation containing a separate title (Title IX) devoted to energy that also creates a Federal Government preferential purchasing program for biobased products to help promote emerging markets for these products (EIA 2009).

On August 8, 2005, the Energy Policy Act of 2005 (Public Law 109-58) was signed into law. The act promotes investments in energy conservation and efficiency, including provisions for promoting residential efficiency, reducing Federal Government energy usage, modernizing domestic energy infrastructure, diversifying the Nation’s energy supply with renewable sources (wind, solar, and biomass energy), and supporting energy-efficient vehicles.

The FSRIA of 2002 created the U.S. Federal Biobased Products Preferred Procurement Program (FB4P). The FSRIA provides for development of a preferred procurement program for biobased products under which Federal agencies are required to purchase biobased products. Research is currently under way on biodiesel fuels, ethanol fuels, and other sources of biomass energy. Associated research is under way

on the measurement of atmospheric emissions associated with renewable energy and the potential effects of deregulation of electric utilities on rural communities. On August 17, 2006, the USDA announced two proposed rules under the FB4P that designate 20 items that must receive special consideration by all Federal agencies when making purchases. The designation of these 20 biobased items is a major step in advancing the Federal Preferred Procurement Program for biobased products. The 20 biobased items include adhesive and mastic removers, insulating foam for wall construction, hand cleaners and sanitizers, composite panels, fluid-filled transformers, biodegradable containers, fertilizers, metal-working fluids, sorbents, graffiti and grease removers, two-cycle engine oils, lip care products, biodegradable films, stationary equipment, hydraulic fluids, biodegradable cutlery, glass cleaners, greases, dust suppressants, carpets, and carpet and upholstery cleaners. When finalized, 1,500 biobased products will be given procurement preference by Federal agencies, generating new economic opportunities for biobased product producers while providing new choices for U.S. consumers. Federal agencies must give preference to designated biobased products in government purchases within one year of publication of the final designation rule. The U.S. Department of Agriculture (USDA 2005) has assembled a list of biobased items that will be used for designation under the FB4P. The USDA has previously issued final guidelines for the biobased procurement program and developed a model procurement program of training and education to help federal procurement officials and users of biobased products identify and purchase qualifying biobased products (USDA 2009).

The Energy Independence and Security Act (EISA) of 2007 will improve vehicle fuel economy and help reduce U.S. dependence on oil. The bill the President signed responds to the challenge of his bold “Twenty in Ten” initiative, which President Bush announced in January 2006 (The White House 2008). It represents a major step forward in expanding the production of renewable fuels, reducing our dependence on oil, and confronting global climate change. The goal is to increase energy security, expand the production of renewable fuels, and make America cleaner for future generations. The EISA has set a target of 16 billion gallons of cellulosic biofuels production by 2022. It would provide one quarter of this production with an efficiency of 100 gallons of biofuels per dry ton of wood, which would mean an increase in wood use of 40 million oven-dry tons per year or an 18% increase over current wood harvest of 224 million oven-dry tons per year (DOE 2008c).

### **United States–Canada Softwood Lumber Dispute**

On July 1, 2006, United States Trade Representative Susan Schwab and Canadian Trade Minister David Emerson initialed the text of a softwood lumber accord. Under the terms of the agreement, the United States and Canada were

supposed to end all litigation over trade in softwood lumber and provide for unrestricted trade in favorable market conditions. When the lumber market is soft, Canadian exporting provinces can choose either to collect an export tax that ranges from 5% to 15% as prices fall or to collect lower export taxes and limit their export volumes. The agreement also included provisions to address potential Canadian import surges, provide for effective dispute settlement, distribute the antidumping and countervailing (anti-subsidy) duty deposits currently held by the United States, and discipline future trade cases. Most of the estimated \$5 billion in duties collected since 2002 were returned to Canadian interests (the importers record), but \$1 billion remained in the United States. The U.S. companies that brought the trade complaint received \$500 million, \$450 million of which was used to fund meritorious initiatives, and \$50 million was used to establish a bi-national industry council. Since July 1, the United States and Canada have undertaken a legal review of the text and have been engaged in discussion regarding clarifications to the agreement. Nonetheless, some forest economists believe that the dispute is far from over because of political and institutional differences between the two countries that could result in the launching of future trade complaints.

### **Summary of Timber Products and Energy Policy**

The past year has been a tumultuous one for U.S. wood and energy markets, with oil prices soaring through the first half of 2008 and diving in its second half. Economic activity in the United States slowed in 2008 and continues to decline during the first quarter of 2009, as evidenced by the decline in real GDP growth of 2.7 % in the first quarter 2009, signaling continued weakness in major sectors of the economy. With GDP declining during the second half of 2008 and into 2009, resulting partly from the decline in the housing sector as reflected in the decline in building permits, increasing unemployment and anxieties about the financial system (which resulted in a government bailout of American International Group (AIG) and banks), there is very little reason to expect better economic conditions over the next few months. Also, with more subprime loan resets and a continuing mortgage default crisis in 2009, the recovery of the U.S. economy is months away. Inflationary pressures and increased unemployment will add to the current U.S. housing woes. The future strength for other domestic and foreign trade sectors of the wood products industry also depends on the general economy, future lumber prices (which were weak in 2008), the declining housing sector, and the value of the dollar.

The U.S. furniture industry, in retreat since 1999, continued declining in 2008 as low-cost furniture imports and the global economic recession continues to erode the domestic industry market share. Employment in the domestic furniture industry has fallen more than 50% since 1999 (Fig. 3).

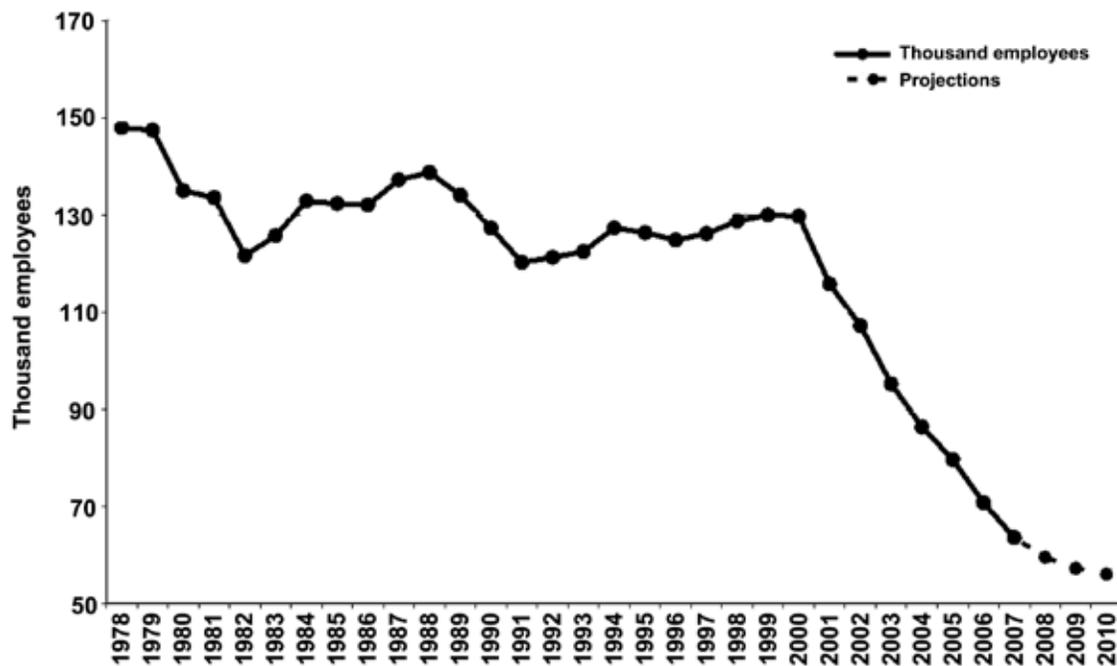


Figure 3. Employment in wood household furniture industry, 1978–2010.

The projections for 2009 show the furniture industry in continued decline but at a slower rate.

The downturn in the world economy has had a significant impact on wood and energy demand, and the near-term future of U.S. wood and energy markets is tied to the downturn's uncertain depth and persistence. The growing concern about greenhouse gas (GHG) emissions and its effect on energy investment decisions, the increasing use of renewable fuels, the increasing production of unconventional natural gas, the shift in the transportation fleet to more efficient vehicles, and improved efficiency in end-use appliances are the result of U.S. energy concerns. The recovery of the world's financial markets is especially important for the wood and energy supply outlook, because the capital-intensive nature of most large projects makes access to financing a critical necessity.

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