United States Department of Agriculture

# U.S. Forest Products Annual Market Review and Prospects, 2011–2015

**James L. Howard**
**David B. McKeever**

Forest Service | Forest Products Laboratory | Research Note FPL–RN–0336 | June 2015

## Abstract

This paper describes the current state of the United States 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 2013 with estimates for 2014 and forecasts for 2015.



Keywords: production, trade, prices, forest products



## Acknowledgment

This publication contains contributions from Kwameka Jones, Economics Assistant, who organized and compiled much of the data contained in this report.


## Contents




June 2015

Howard, James L.; McKeever, David B. 2015. U.S. forest products annual market review and prospects, 2011–2015. Research Note FPL-RN-0336. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 11 p.

A limited number of free copies of this publication are available to the public from the Forest Products Laboratory, One Gifford Pinchot Drive, Madison, WI 53726–2398. This publication is also available online at www.fpl.fs.fed.us. Laboratory publications are sent to hundreds of libraries in the United States and elsewhere.

The Forest Products Laboratory is maintained in cooperation with the University of Wisconsin.

# U.S. Forest Products Annual Market Review and Prospects, 2011–2015

**James L. Howard,** Economist
**David B. McKeever**, Research Forester
Forest Products Laboratory, Madison, Wisconsin

## Executive Summary

Economic activity in the United States exhibited resiliency during the third quarter of 2014, and the outlook for growth into 2015 was stronger than previously forecast. This outlook was confirmed by the increase in the estimated annual rate of real gross domestic product (GDP) to 2.1% in 2014, down from the previously expected 2.4%. Economic activity during the fourth quarter of 2014 was projected to increase to an annual rate of 3.1%. The rate of growth in the U.S. economy will likely increase slightly in the first half of 2015 then flatten out as predicted by 43 forecasters surveyed by the Federal Reserve Bank of Philadelphia (2014). The higher rate of growth in the U.S. economy predicted for 2014 resulted partly from the increasing growth in exports for the U.S. economy as China increased imports. The indications were that global trade was on the rise, increasing prospects that exports will buoy the U.S. economy in the coming months as net exports remained at about $450 billion quarterly. Growth in U.S. real output looked stronger and inflation low over the near term compared with previous estimates. Forecasters expected to see a slight decline in the 2014 unemployment rate, measured on an annual-average basis. Unemployment was expected to fall from 6.1% in the third quarter of 2014 to 5.8% in the first quarter of 2015 while a decline to 6.0% in the fourth quarter of 2014 was expected. The unemployment rate was 8.1% at the beginning of 2012 because many unemployed stopped looking for work. The forecasters saw prices unchanged in the third quarter of 2014, which was a slightly lower rate than previously expected, and then staying flat in the fourth quarter of 2014 and into 2015. New home sales were stronger during the first 8 months of 2014 than a year previously. Although existing home sales decreased in August, the housing recovery seemed to be maintaining momentum. While still remaining close to historic lows, new home sales grew in August with expectations for continued improvement into 2015 (NAHB 2014a). August housing starts fell 16.0% from July. The decrease came mostly from the single family sector, which the industry finds discouraging.

The growth in the housing sector continued to have a positive effect on softwood lumber consumption in 2014. According to the Western Wood Products Association (WWPA), during the first 7 months of 2014, softwood lumber consumption increased 5.0% from the same period in 2013, and shipments of softwood lumber from western mills increased 5.5% during the first 7 months of 2014 compared with the same period in 2013. The Southern region continues to have the highest levels of production and shipments of softwood lumber on a volume basis while the West leads in production and shipments of softwood lumber on a percentage basis.

According to APA – The Engineered Wood Association (APA), total structural panel production increased 2.2% over the first three quarters of 2014 when compared with the first three quarters of 2013 (APA 2014). For the first 9 months of 2014, structural panel production was up about 339 million cubic meters when compared with the same time period in 2013. Structural panel consumption at the end of the third quarter of 2014, which was 688 million cubic meters greater than the same time period of the previous year representing a 4.1% increase for the first three quarters in 2014. Overall, structural panel consumption was expected to increase to 26.0 million cubic meters in 2014 (Elling 2013–2018).

Roundwood production for pulp and wood-based panel mills was 139 million cubic meters in 2013, up slightly from 2012. It was forecast that roundwood pulpwood consumption would increase during 2014. Pulpwood supplied from residues could continue to increase in 2014 relative to roundwood because of increases in housing construction and the wood products industry. It was also possible that supply from residues could decrease with increased competition for residues to produce pellets or biomass for power.

U.S. exports to China have followed a similar pattern, rising throughout the first half of 2014 when U.S. timber product exports to China were high compared with the previous year, but declining ever since. Lumber shipments in October of 39 million cubic meters were less than half of the October 2013 volume. Douglas-fir exports from the United States to China declined 16% this year through October compared with a year ago, slipping 138 million cubic meters.

The U.S. furniture industry, in retreat since 1999, was up 2.4% in August 2014 compared with a year ago. The domestic industry share of U.S. consumption stabilized after eroding because of low-cost furniture imports, a sluggish global economy, and a need for the industry to become more consumer-focused. Employment in the domestic furniture industry has fallen more than 50% since 1999. The furniture

industry for the first 8 months of 2014 rose at an annual rate of almost 8%.

## General Economic and Major Market Trends

According to 43 forecasters surveyed by the Federal Reserve Bank of Philadelphia (August 15, 2014), the U.S. economy was expected to grow at a stronger rate during the third quarter of 2014 than during the second quarter and the expectations of a fourth quarter rebound were good. The forecasters expected real gross domestic product (GDP) to grow at an annual rate of 2.1% in 2014. The increased optimism about the labor market accompanied the outlook for stronger output growth. Average unemployment was 6.3% in 2014. The 43 forecasters expected unemployment to improve to 5.7% in 2015. This decline in unemployment equated to nonfarm payroll employment growing at a rate of 228,600 jobs per month during the third quarter 2014 and 211,200 jobs per month during the fourth quarter 2014. On an annual-average basis, the forecasters expected job gains of 204,800 per month in 2014 and 214,000 per month in 2015. During the recession from 2007 to 2009, the effect on the job market was 8 million jobs lost in the worst economic downturn since the 1930s' Great Depression. Almost every sector experienced job cuts; construction lost 2 million jobs, financial services lost 800,000 jobs, and the auto sector lost thousands of jobs. About 7 million adults were already looking for full-time employment before the recession hit in December 2007. The U.S. economy must create about 125,000 new jobs per month just to keep up with population growth and to prevent unemployment from rising. The strength of GDP growth will be the major determinant of when the U.S. economy reaches full employment. With strong GDP growth, full employment could be reached in 2 years. But if GDP growth is weak, reaching full employment could take several years.

Core inflation, as measured by the Price Index for personal consumption expenditures, was expected to average 1.7% in 2014, then increase slightly to 1.9% into 2015. On an annual-average over annual-average basis, inflation in the core Consumer Price Index was projected to remain around 1.8% in 2014 before increasing to 2.0% in 2013 (Federal Reserve Bank of Philadelphia 2014).

New housing construction slowed during the third quarter of 2014 when 956,000 units were started in August at a seasonally adjusted annual rate (NAHB 2014a). The decline was due mainly to lower single family starts, which fell to 643,000 units, down 2.4% from July. All four regions in the United States contributed to the decrease in the level of housing starts during the first three quarters of 2014. Single family starts in the West fell 2.5% after rising 20.0% in July. After declining in the 2nd quarter, starts in the Northeast were still on pace to exceed the 2013 level for third quarter starts. After two months of volatile starts, the Midwest and South saw starts fall in August. The South was the largest region for multifamily starts and the annual rate decreased 11.0% in August. The West region also experienced significant decreases in August. Single-family building permits in August decreased from 631,000 in July to 626,000 in August, a 1.0% decrease. The decrease in starts reported in the Northeast and Midwest coincided with decreases in permits of 11.5% and 12.4%, respectively. The South experienced a decrease in building permits of 3,000 in August from July. New single-family units completed increased by 6.2%, from 598,000 in June to 635,000 units in July. Total housing starts for 2013 were 925 thousand units and the expectations for 2014 were for significant improvement.

In August 2014, the annual rate for total value of all new construction in the United States was $961 billion, $46 billion above the annual August 2013 value of $915 billion (NAHB 2014a). The seasonally adjusted annual rate for the total value of new construction was above the 2013 annual rate for each month through August in 2014. Residential construction was $352 billion in August 2014, $13 billion above the $339 billion annual rate of residential construction in 2013. Nonresidential construction accounts for approximately 25% to 35% of all construction value in the United States. It, too, was affected by the recent economic recession but not so severely as residential construction. Nonresidential construction is typically divided between the construction of buildings (stores, offices, schools) and structures other than buildings (dams, bridges). In 2014, the construction of buildings, which are the largest market for wood in nonresidential construction, was at an annual rate of $318 billion, compared with $299 billion in 2013 and $289 billion in 2010. The highest rate ever achieved was in 2008 when the construction of nonresidential buildings was nearly $710 billion. The 2014 forecast from NAHB calls for the housing sector to improve in the fourth quarter, and starts and sales overall for 2014 ended the year above 2013 levels (NAHB 2014a).

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. For the past 3 years, the U.S. role on the world stage has grown as a result of the ongoing recovery in the construction sector. The United States is a world leader in the consumption of paper and paperboard (about 73 million metric tons in 2013), which is mostly supplied by domestic production and imports from Canada (AF&PA 2014). Domestic paper and paperboard production for the first 8 months of 2014 was about 1.9% below the production for the first 8 months of 2013. This decline was mainly reflected in the printing and writing grades of paper as electronic media continues to grab market share from printed media. The U.S. solid wood industry manufactured about 68 million cubic meters of lumber and 19 million cubic meters of structural panel products in 2013. For the first 7 months of 2014, softwood

lumber production was 5.0% above 2013 production for the first 9 months of 2014, and structural panel consumption was 4.1% above 2013 levels. The U.S. forest products industry's annual harvest was 384 million cubic meters in 2013, exceeding the 372 million cubic meters harvested in 2012. In 2014, domestic roundwood timber harvest that supported domestic consumption was expected to be above the 2013 harvest level.

Expenditures for residential repair and remodeling increased in 2013 to $130 billion, up 3.2% from one year ago but still well below the record high years of 2006 and 2007. The continued recovery in the housing market was not reflected in residential remodeling, which averaged $120 million monthly for the first three quarters of 2014, down from the 2013 average. In 2007, the U.S. Department of Commerce stopped collecting residential repair and remodeling data. The estimates for 2013 and 2014 presented here are Forest Service estimates based on private residential construction expenditures. The NABH Remodeling Market Index (RMI) climbed to 56.0 in the third quarter 2014 up from 49.0 in the first quarter of 2013. This index level was above the record level in 2004 prior to the housing market crash. During this same period, new residential construction exhibited strengthening and continued do so into the third quarter 2014. 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. The unprecedented levels of home foreclosures in the United States in recent years have subsided; residential improvements and repairs during that time may have been a bigger part of the economy than usual. Many foreclosed homes needed significant maintenance to become marketable. Expectations are for continued but declining investments in existing residential properties as low mortgage rates keep new home buying attractive.

Two of the three major indicators of demand for wood products—furniture and related products, paper products output, and total industrial production—were higher during the first 7 months of 2014 relative to 2013.

- Furniture and related products output, a determinant of high-grade lumber production, was up 8.0% during the first 8 months of 2014.
- Paper products output, a determinant of pulpwood and wood residue use, as well as recycled fiber availability and use, decreased during the first 8 months of 2014 compared with the 2013 average. The index (2007 = 100) of paper products output for the first 8 months of 2013 was 2.0% below the 2013 average for the comparable time period.
- Industrial production, an important demand determinant for pallet lumber, containerboard, and some grades of paper, increased 4.5% during the first 7 months of 2014 when compared with the annual level for 2013.

In summary, the housing sector gained strength during the first 3 quarters of 2014 and was expected to continue to improve in the fourth quarter of 2014. This strength was expected to continue into 2015. Housing starts in 2014 probably exceeded levels from the previous year significantly. Even with the slow rate of growth in GDP, 2014 was a good year overall as noted by the growth in timber markets. 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 2014 were preliminary estimates, data for 2015 are forecasts.

## U.S. Wood Product Market Shares

Annual U.S. solid wood products production and foreign trade data are collected annually by governmental 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 2013). 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 wood products, 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 and Howard 2011).

Table 3 presents annual balanced wood products consumption by end use for sawn wood, structural panels, and nonstructural panels for the period 2006 through 2013, with preliminary estimates for 2014 and forecasts for 2015. 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 strong in 2014 and strengthened into the third quarter 2014. The housing market was likely to finish the year at a slightly higher level than recorded the previous year. The housing sector was improving as evidenced by its overall increasing market share and was having a positive effect on softwood

**Table 1—Selected U.S. economic indicators, 2011–2015**

| | Actual[a] | | | Estimate[b] | Forecast[c] |
|---|---|---|---|---|---|
| Indicator | 2011 | 2012 | 2013 | 2014 | 2015 |
| Gross domestic product (billion 2009 dollars) | 14,784 | 15,021 | 15,369 | 15,710 | 15,966 |
| New housing starts (million units) | 0.609 | 0.781 | 0.925 | 1.197 | 1.233 |
| Mobile home shipments (thousand units) | 51 | 55 | 60 | 62 | 64 |
| Total residential fixed investment (billion 2009 dollars) | 384.5 | 436.5 | 488.4 | 495.8 | 502.6 |
| Total nonresidential fixed investment (billion 2009 dollars) | 847.9 | 905.6 | 947.2 | 990.8 | 999.3 |
| Total industrial production (Index: 2007 = 100) | 93.6 | 97.1 | 99.9 | 103.6 | 104.5 |
| Furniture and related products (Index: 2002 = 100) | 65.0 | 69.0 | 70.0 | 74.0 | 78.0 |
| Paper products (Index: 2002 = 100) | 83.0 | 84.0 | 86.0 | 88.0 | 90.0 |

Sources
[a]Board of Governors of the Federal Reserve System (2014), National Association of Home Builders (Oct. 2014a), U.S. Department of Commerce, Bureau of the Census (2014).
[b]Forest Service estimates based on 2013 actual data and preliminary 2014 data.
[c]National Association of Home Builders (2014b), Survey of Professional Forecasters and Forest Service estimates.

**Table 2—Prospects and statistics for wood and wood products, 2013–2015[a]**

**Sawn softwood**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 50,970 | 51,220 | 51,806 |
| Imports | 19,212 | 20,006 | 20,872 |
| Exports | 4,313 | 4,366 | 4,095 |
| Consumption | 65,869 | 66,860 | 68,583 |

**Coniferous logs**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 122,330 | 123,897 | 125,007 |
| Imports | 1,666 | 1,701 | 1,805 |
| Exports | 12,221 | 12,346 | 12,488 |
| Consumption | 111,775 | 113,252 | 114,324 |

**Sawn hardwood**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 17,320 | 17,406 | 17,450 |
| Imports | 837 | 840 | 855 |
| Exports | 3,451 | 3,460 | 3,480 |
| Consumption | 14,706 | 14,786 | 14,825 |

**Hardwood logs**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 32,008 | 32,887 | 33,011 |
| Imports | 229 | 240 | 265 |
| Exports | 1,001 | 1,021 | 1,021 |
| Consumption | 31,236 | 32,106 | 32,255 |

**Coniferous plywood**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 8,270 | 8,333 | 8,402 |
| Imports | 502 | 536 | 567 |
| Exports | 694 | 744 | 750 |
| Consumption | 8,078 | 8,125 | 8,219 |

**Non-coniferous plywood**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 1,448 | 1,465 | 1,501 |
| Imports | 1,955 | 2,001 | 2,100 |
| Exports | 182 | 188 | 196 |
| Consumption | 3,221 | 3,278 | 3,405 |

**Oriented strandboard (OSB)**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 11,055 | 12,277 | 12,408 |
| Imports | 3,500 | 3,600 | 3,802 |
| Exports | 280 | 295 | 306 |
| Consumption | 14,275 | 15,582 | 15,904 |

**Particleboard**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 4,108 | 4,200 | 4,250 |
| Imports | 529 | 545 | 550 |
| Exports | 63 | 60 | 65 |
| Consumption | 4,574 | 4,685 | 4,735 |

**Medium density fiberboard (MDF)**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 1,727 | 1,750 | 1,780 |
| Imports | 881 | 881 | 890 |
| Exports | 620 | 620 | 640 |
| Consumption | 1,988 | 2,011 | 2,030 |

**Insulation board**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 2,755 | 2,755 | 2,755 |
| Imports | 150 | 177 | 177 |
| Exports | 129 | 140 | 140 |
| Consumption | 2,776 | 2,792 | 2,792 |

**Roundwood pulpwood**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 126,702 | 126,000 | 125,902 |
| Imports | 533 | 548 | 566 |
| Exports | 446 | 463 | 475 |
| Consumption | 126,789 | 126,085 | 125,993 |

**Hardboard**

| | 2013 | 2014 | 2015 |
|---|---|---|---|
| Production | 649 | 655 | 660 |
| Imports | 180 | 185 | 185 |
| Exports | 227 | 239 | 240 |
| Consumption | 602 | 601 | 605 |

[a]All volumes are reported in 1,000 cubic meters. Figures for 2014 are Forest Service linear extrapolated estimates, 2015 are Forest Service linear extrapolated forecasts.

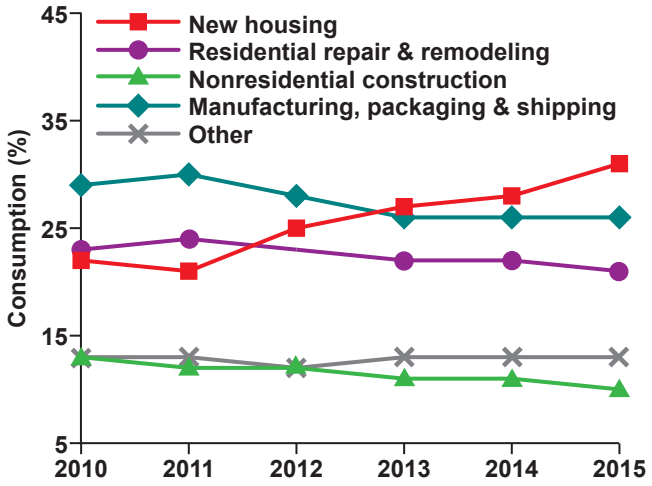


**Figure 1—Solid wood timber products consumption market shares, 2000–2014.**

lumber consumption (Fig. 1, Table 3). According to the WWPA, during the first 7 months of 2014, softwood lumber consumption increased 6.0% from the same period in 2013, and shipments of softwood lumber from western mills also increased 5.2% during the first 7 months of 2014 compared with the same period in 2013 (WWPA 2014). Production increased 4.8% during this period in the South. Apparent consumption for the first 7 months of 2014 was 41.8 million cubic meters, 6.0% above the 39.4 million cubic meters for the first 7 months of 2013. As predicted, the U.S. housing construction industry grew over the first half of 2014. Timber production as a result of a strengthening domestic market continued to increase in 2014 slightly above the 2013 timber growth level. Softwood production through the first 7 months of 2014 was 31.3 million cubic meters, which was up 5.0% when compared with the first 7 months of 2013, when 29.8 million cubic meters of sawn softwood were produced. Production of sawn softwood for 2014 was forecast to exceed 2013 levels, and then continued to rebound with a gradual increase in 2015.

Sawn softwood imports increased 8.6% during the first 7 months of 2014 relative to the same time period in 2013. The volume of Canadian imports, which constituted 96% of all sawn softwood imports, increased by 8.9% over this period. Total sawn softwood imports were 18.6 million cubic meters in 2013.

During the first 7 months of 2014, U.S. sawn softwood exports increased 7.5% compared with exports for the same period in 2013. Exports to Canada decreased by 3.8%, while exports to China increased 34.6 % and exports to Mexico decreased 1.0%.

## Sawn Hardwood

Sawn hardwood production was expected to increase to 17.4 million cubic meters in 2014. Imports in 2014 were expected to increase from one year earlier. Given the increase in U.S. production and imports as well as a strengthening housing market, apparent consumption for 2014 was forecast to exceed the 2013 volume.

## Softwood Log Trade

Softwood log exports to China increased by 13.7% over the first 7 months of 2014 when compared with exports in the same period of 2013. Softwood log exports to Canada decreased by 12.2% in the same period. Softwood log exports to all other countries decreased by 9.1% during the first 7 months of 2014 when compared with the same time period of 2013. Fueling the increase in softwood log exports, especially during the third quarter of 2014, were the increased exports to China as China's economy continued a period of expansion. Most of the U.S. export increases have been centered in the Pacific Northwest. Overall, the volume of U.S. logs shipped to China rose by more than 10 times from 256,000 cubic meters in 2007 to an estimated 2.2 million in 2013, or about 7% of the region's total log production. Softwood log imports decreased by 43.7% over the first 7 months of 2014 compared with a year earlier. During 2013, the timber harvest surpassed the 2012 harvest and the forecast called for a further rise in harvest in 2014.

## Hardwood Log Trade

Hardwood log exports decreased by 6.0% and imports rose by 38.9% during 2013 compared with 2012. Canada traditionally provides about 95% of U.S. imports. The trend in hardwood log exports was up from a year ago through the first 8 months of 2014. Hardwood log imports were also up slightly through the first 8 months of 2013 when compared with 2012.

## Pulpwood

Roundwood production for pulp and wood-based panel mills was 123 million cubic meters in 2013, down slightly from 2012. Roundwood pulpwood consumption was expected to decrease during 2014 as indicated by a 0.2 % decline in paperboard production over the first 8 months of 2014. Pulpwood supplied from residues continued to decrease relative to roundwood. This was a result of declining residual production and competition for residuals for pellets and biomass and not out of preference on the part of pulp producers. The residue portion of pulpwood was 93.3 million cubic meters in 2013, up slightly from 2012. Trade patterns have continued 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 decade was due largely to a downturn in consumer spending associated with the United States and global recession. Exports of paper, paperboard, and converted products decreased by 1.9% to 11.7 million metric tons, whereas imports of paper and paperboard increased by 4.9% to 9.9 million metric tons in 2013. Paper and paperboard production decreased by 0.7 % in 2013, falling to 72.9 million metric tons. The

**Table 3—Wood product market share percentages in the United States, by end use, 2010–2015**

| Year[a] | Residential construction | | | | | | Nonresidential construction | | | Total construction | Manufacturing | | | Packing & shipping | Total, all end uses | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | New housing | | | | Repair & remodeling | | | | | | | | | | | |
| | New single family | New multi family | Manufactured housing | Total | | Total | Building | Other | Total | | Furniture | Other | Total | | | |
| **Sawn softwood[b]** | | | | | | | | | | | | | | | | |
| 2010 | 22 | 2 | 2 | 26 | 29 | 54 | 9 | 2 | 11 | 65 | 3 | 6 | 9 | 11 | 85 | 15 |
| 2011 | 20 | 3 | 2 | 25 | 30 | 55 | 8 | 2 | 10 | 65 | 3 | 6 | 10 | 11 | 86 | 14 |
| 2012 | 23 | 4 | 1 | 29 | 28 | 57 | 8 | 2 | 10 | 66 | 3 | 6 | 9 | 10 | 86 | 14 |
| 2013 | 25 | 5 | 1 | 31 | 27 | 59 | 7 | 2 | 9 | 67 | 3 | 6 | 9 | 10 | 86 | 14 |
| 2014 | 25 | 6 | 1 | 32 | 27 | 59 | 7 | 2 | 9 | 68 | 3 | 6 | 8 | 10 | 86 | 14 |
| 2015 | 28 | 6 | 1 | 35 | 25 | 61 | 7 | 2 | 9 | 69 | 3 | 5 | 8 | 9 | 86 | 14 |
| **Sawn hardwood** | | | | | | | | | | | | | | | | |
| 2010 | 2 | 0 | 0 | 2 | 6 | 8 | 4 | 13 | 17 | 25 | 11 | 11 | 22 | 43 | 90 | 10 |
| 2011 | 2 | 0 | 0 | 2 | 6 | 8 | 4 | 11 | 14 | 22 | 10 | 11 | 21 | 47 | 90 | 10 |
| 2012 | 2 | 1 | 0 | 3 | 6 | 8 | 4 | 11 | 15 | 24 | 10 | 10 | 20 | 46 | 90 | 10 |
| 2013 | 2 | 1 | 0 | 3 | 5 | 8 | 3 | 10 | 13 | 21 | 8 | 9 | 17 | 41 | 79 | 21 |
| 2014 | 2 | 1 | 0 | 3 | 5 | 8 | 3 | 9 | 13 | 21 | 8 | 9 | 17 | 41 | 79 | 21 |
| 2015 | 2 | 1 | 0 | 4 | 5 | 9 | 3 | 9 | 12 | 21 | 8 | 8 | 17 | 41 | 79 | 21 |
| **Total sawnwood** | | | | | | | | | | | | | | | | |
| 2010 | 19 | 2 | 1 | 22 | 25 | 48 | 8 | 4 | 12 | 59 | 4 | 7 | 11 | 16 | 86 | 14 |
| 2011 | 17 | 3 | 1 | 22 | 26 | 47 | 7 | 3 | 11 | 58 | 4 | 7 | 11 | 17 | 86 | 14 |
| 2012 | 21 | 4 | 1 | 25 | 25 | 50 | 7 | 3 | 10 | 61 | 4 | 7 | 11 | 15 | 86 | 14 |
| 2013 | 22 | 4 | 1 | 28 | 24 | 52 | 7 | 3 | 10 | 62 | 4 | 6 | 10 | 15 | 86 | 14 |
| 2014 | 22 | 5 | 1 | 28 | 24 | 52 | 7 | 3 | 10 | 62 | 4 | 6 | 10 | 15 | 86 | 14 |
| 2015 | 24 | 5 | 1 | 31 | 23 | 53 | 6 | 3 | 9 | 63 | 4 | 6 | 9 | 14 | 86 | 14 |
| **Coniferous plywood** | | | | | | | | | | | | | | | | |
| 2010 | 10 | 1 | 0 | 12 | 30 | 42 | 18 | 3 | 21 | 63 | 5 | 17 | 22 | 8 | 93 | 7 |
| 2011 | 10 | 1 | 0 | 12 | 32 | 43 | 18 | 3 | 21 | 64 | 6 | 18 | 24 | 8 | 96 | 4 |
| 2012 | 12 | 2 | 0 | 14 | 30 | 44 | 17 | 3 | 20 | 64 | 5 | 18 | 23 | 7 | 95 | 5 |
| 2013 | 14 | 2 | 0 | 16 | 30 | 46 | 17 | 3 | 20 | 66 | 5 | 17 | 22 | 7 | 96 | 4 |
| 2014 | 13 | 3 | 0 | 16 | 29 | 46 | 17 | 3 | 20 | 65 | 5 | 17 | 22 | 7 | 95 | 5 |
| 2015 | 15 | 3 | 0 | 18 | 29 | 47 | 17 | 3 | 19 | 67 | 5 | 16 | 21 | 7 | 95 | 5 |
| **Oriented strandboard (OSB)** | | | | | | | | | | | | | | | | |
| 2010 | 40 | 3 | 3 | 46 | 19 | 64 | 13 | 3 | 16 | 80 | 0 | 1 | 1 | 4 | 86 | 14 |
| 2011 | 37 | 4 | 4 | 45 | 20 | 64 | 14 | 2 | 16 | 80 | 0 | 1 | 1 | 4 | 86 | 14 |
| 2012 | 45 | 5 | 3 | 54 | 19 | 73 | 14 | 2 | 16 | 89 | 0 | 1 | 1 | 4 | 95 | 5 |
| 2013 | 46 | 6 | 3 | 55 | 18 | 73 | 13 | 2 | 15 | 87 | 0 | 1 | 1 | 4 | 92 | 8 |
| 2014 | 47 | 7 | 3 | 58 | 17 | 75 | 13 | 2 | 15 | 90 | 0 | 1 | 1 | 4 | 95 | 5 |
| 2015 | 50 | 8 | 3 | 61 | 16 | 77 | 12 | 2 | 14 | 90 | 0 | 1 | 1 | 4 | 95 | 5 |
| **Total, structural panels** | | | | | | | | | | | | | | | | |
| 2010 | 27 | 2 | 2 | 32 | 23 | 55 | 15 | 3 | 18 | 73 | 2 | 8 | 10 | 6 | 89 | 11 |
| 2011 | 26 | 3 | 2 | 31 | 25 | 56 | 15 | 3 | 18 | 74 | 3 | 8 | 11 | 6 | 90 | 10 |
| 2012 | 29 | 4 | 2 | 35 | 24 | 59 | 15 | 3 | 18 | 78 | 3 | 9 | 12 | 6 | 95 | 5 |
| 2013 | 30 | 4 | 2 | 36 | 24 | 60 | 15 | 2 | 17 | 77 | 3 | 9 | 11 | 5 | 94 | 6 |
| 2014 | 31 | 5 | 2 | 38 | 23 | 61 | 15 | 2 | 17 | 78 | 3 | 9 | 11 | 5 | 95 | 5 |
| 2015 | 33 | 5 | 2 | 41 | 22 | 63 | 14 | 2 | 16 | 79 | 3 | 8 | 11 | 5 | 95 | 5 |
| **Nonstructural panels[c]** | | | | | | | | | | | | | | | | |
| 2010 | 12 | 2 | 1 | 15 | 14 | 29 | 10 | 1 | 10 | 40 | 22 | 22 | 44 | 2 | 85 | 15 |
| 2011 | 10 | 3 | 1 | 14 | 15 | 29 | 9 | 0 | 10 | 38 | 22 | 24 | 46 | 2 | 85 | 15 |
| 2012 | 12 | 4 | 1 | 16 | 14 | 30 | 9 | 0 | 9 | 40 | 21 | 23 | 45 | 1 | 86 | 14 |
| 2013 | 13 | 4 | 1 | 18 | 14 | 33 | 9 | 0 | 9 | 42 | 22 | 23 | 44 | 1 | 88 | 12 |
| 2014 | 14 | 5 | 1 | 20 | 14 | 34 | 9 | 0 | 9 | 43 | 22 | 22 | 44 | 1 | 89 | 11 |
| 2015 | 16 | 6 | 1 | 22 | 14 | 36 | 9 | 0 | 9 | 45 | 23 | 22 | 44 | 1 | 91 | 9 |

[a]2010–2013 revised, 2014 preliminary, 2015 forecast.
[b]Includes laminated veneer lumber.
[c]Includes particleboard, medium density fiberboard, insulation board, hardboard, and non-coniferous plywood.

production of paper and paperboard in 2014 was forecast to be down from 2013 production as reflected in the annual year to date rate for August 2014 of 48.1 million metric tons, which was down 1.9% from 2013 when paper and paperboard was produced at a level of 49.0 million metric tons. Paper and paperboard imports were at an annual rate in July of 5.9 million metric tons, which was up 5.0% from the previous year.

## Structural Panels

Structural panel production in 2013 was 8.0% above that of 2012, whereas consumption was 10.3% above consumption in 2012 (APA 2014). Structural panel production at the end of the third quarter of 2014 was 14.8 million cubic meters, which was above the first three quarters of 2013. Overall, structural panel production was expected to increase to 22.9 million cubic meters in 2014 (Elling 2013–2018). Structural panel market shares were negatively affected by the recent economic downturn. New residential construction, which in 2006 captured 46% of all structural panel consumption, fell to 35% in 2011 and was expected to continue increasing in 2014 (Table 3).

In 2013, 11.1 million cubic meters of oriented strandboard (OSB) were produced (Table 2). OSB consumption totaled 14.3 million cubic meters in 2013 and constituted 60% of the structural panel market (Table 3). This represented a 4% share increase from 2008. Consumption was expected to further increase in 2014 (APA October 2014). At the end of the third quarter 2014, OSB consumption was 11.5 million cubic meters, 8.1% above the first three quarters of 2013. The continuing economic recovery and growing residential construction sector was expected to increase OSB consumption in 2014 to near 16 million cubic meters.

Softwood plywood production was 8.3 million cubic meters in 2013 (Table 2, APA 2014). This level of production was 1.8% above 2012. Softwood plywood production at the end of the third quarter in 2014 was 6.0 million cubic meters, 3.9% below 2013 when compared with the numbers at the end of third quarter in 2013. The volume of softwood plywood production fell throughout the 1990s, and the decline continued into 2012 before improving in 2013. Softwood plywood imports increased in 2013 by 33.1% compared with 2012 data, while softwood plywood third quarter exports increased in 2014 by 10.8%. Plywood exports to Canada increased by 21.9% during the first three quarters in 2014 compared with a year earlier, and plywood imports from Canada decreased 4%. Softwood plywood consumption was 6.9 million cubic meters at the end of the third quarter 2014, which was 2.9% above 2013. Apparent consumption of softwood plywood was expected to decrease in 2014 and 2015.

## Hardwood Plywood

Hardwood plywood production, including core material such as particleboard and medium density fiberboard (MDF), was estimated at 1.4 million cubic meters in 2013, up slightly from 2012 production. Hardwood plywood imports increased 0.3% in 2013, climbing to 2.2 million cubic meters when compared with 2012. Hardwood plywood exports rose in 2013, increasing 3.5% to 206 thousand cubic meters. Production and consumption of hardwood plywood in 2014 and 2015 was forecasted to steadily rise (Table 2). These increases were a result of rising Total Industrial Production and Furniture and Related Products production (Table 1), coupled with the U.S. housing market rebound.

## Particleboard and Medium Density Fiberboard

Information from the Composite Panel Association (CPA 2014) indicates that particleboard and medium density fiberboard (MDF) production increased slightly during 2013. Particleboard production was 4.1 million cubic meters, an increase of 9.2%, and MDF production was 3.1 million cubic meters, an increase of 5.9% (Table 2). During 2013, particleboard and MDF imports combined increased on a volume basis, compared with 2012. Particleboard and MDF exports also increased in 2013 over 2012. Consumption of particleboard and medium-density fiberboard combined increased slightly in 2013 when compared with 2012. Particleboard and MDF account for well over one-half of all nonstructural panels consumed in the United States, although they are not a large component in residential construction. Nonetheless, their market was projected to increase into 2015 (Table 3).

## Hardboard

Based on data from CPA (2014), 770 thousand cubic meters of hardboard were produced in 2013 in the United States and Canada; this level of production was expected to increase slightly in 2014. 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 2014) showed that 2.7 million cubic meters of insulation board was produced in 2013, unchanged from 2012. 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 2013 Department of Energy survey and adjusting for the 2013 winter weather and an increasing trend in fuelwood use per household, fuelwood consumption was estimated to be 40.0 million cubic meters in 2013—a increase of 3.4% from 2012. Households use most fuelwood for heating and aesthetic enjoyment. Some forest products manufacturing facilities use mill residues rather than roundwood for fuel. A small portion of roundwood fuelwood is used for electric power production. Use for heat and/or electricity production electric power is limited by the low cost

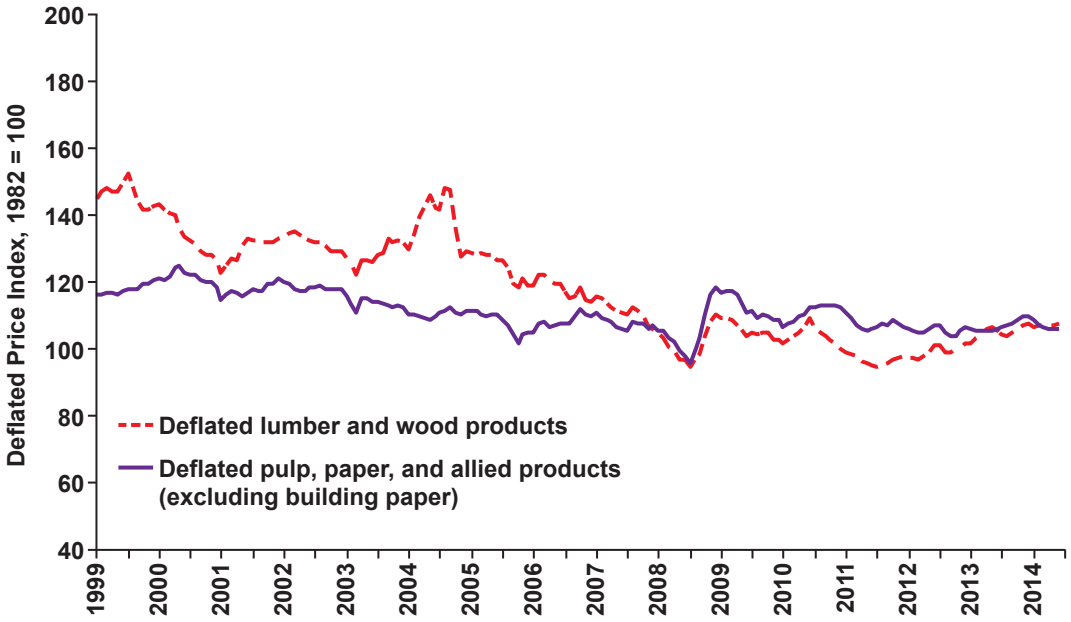


**Figure 2—Wholesale prices of forest products, 1999–2014.**

of coal and natural gas alternatives. Fuelwood consumption for 2013 was above the level for 2012 and the forecast calls for increased fuelwood consumption through 2014. Renewable Fuel Standards and other biomass-related energy policies are unlikely to increase the growth rate for fuelwood production and consumption, but likely to increase other forms of wood energy use such as pellets.

### 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 (USDL 2011). 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. The PPI for lumber was down 7.3 points in 2009 from 2008. 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 2011. The PPI for both lumber and pulp paper and allied products increased since 2011, throughout 2012, and into 2013. Because 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 strengthening in the housing market has caused an uptick in the price levels during this current resurgence fueled also by the increase in demand for wood products as a result of rebuilding made necessary by damage incurred from tropical storm Sandy. 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 before fluctuating throughout 2013 but increasing into the fourth quarter of 2014.

## Energy Policy Initiatives

### Wood Energy

The wood energy market in the United States is comprised of four major sectors: industrial (68%), residential (20%), electricity (9%), and commercial (3%). The industrial sector represents wood products and the pulp and paper industry; and the amount of wood energy it consumes has been mainly linked to wood product output rather than public policies. The other three sectors have been where public policy is focused at the state and federal level. Historically, public policy was focused on promoting the use of biomass for electricity, whereas in recent years, there has been a shift to greater support for liquid fuels for transport.

The most effective federal incentives introduced since 2004 according to recent publications appear to be (a) the Renewable Energy Production Tax Credits, (b) Clean Renewable Energy Bonds, (c) Qualified Energy Conservation Bonds, and (d) Investment Tax Credits (Aguilar et al. 2011). All of these incentives are tailored to the electricity generation sector. Recent publications also suggest that the eligibility of open-loop biomass plants (i.e., not relying on bioenergy

dedicated crops, but instead on material harvested from working forest and industry coproducts) for Renewable Energy production Tax Credits have favored the greater use of woody materials, especially in the electricity sector.

Biomass Crop Assistance Program (BCAP) implementation guidelines (section 9.4.1.2) have been recently updated. BCAP, a policy established to help meet U.S. Federal Renewable Fuel Standards, mandates increased national biofuel use to reach 36 billion gallons a year by 2022, with 21 billion gallons per year from advanced biofuels (U.S. Public Law 110-140).

Wood pellet manufacturing is the most dynamic wood energy sector in the United States because of increases in capacity and production of industrial pellets for export in the European Union (EU). EU bioenergy demand and supply are influenced by policies that seek to ensure use of biomass for energy results in real greenhouse gas (GHG) emission reductions and do not imperil the sustainability of bioenergy feedstock. U.S. export capacity has increased from less than 100,000 tonnes in 2008 to almost 3 million tonnes in 2013. Pellet production for the local market and use for U.S. residential heating is stalled, but industrial pellet use is increasing with current production capacity estimated at about 5 million tonnes.

## Biomass Energy

The renewed growth in the world economy has had a significant impact on wood and energy demand with the near-term future of U.S. wood and energy markets tied to the United States domestic upturn from the recession that started in 2008. The growing concern about GHG emissions along with their effect on climate change 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 continued improvement 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.

Although the electricity sector has been a major beneficiary of federal public policy support, it has recently been facing increased scrutiny because of GHG emissions. Whether power generation using woody feedstock is considered a GHG carbon-neutral option is undergoing debate. On January 12, 2011, the U.S. Environmental Protection Agency (EPA) announced its plan to defer for 3 years the requirement for GHG permits for $CO_2$ emissions from biomass-fired and other biogenic sources (EPA 2011a).

The EPA has been developing guidelines to restrict emissions from certain stationary sources, such as electric power plants. The EPA has suggested the possibility that emissions from biomass might be treated on the same terms as emissions from fossil fuels. At the same time, it recognized the uncertainty about the carbon offset benefits of wood and other biomass sources (EPA 2010). Biogenic $CO_2$ emissions being reviewed include diverse sources such as those derived from combustion of biological material, including all types of wood and wood co-products, forest residues, and agricultural material (EPA 2011b).

The Pellet Fuels Institute was created as a North American trade association to promote energy independence through the efficient use of densified biomass fuel.

## Summary of Timber Products and Energy Policy

2014 was less volatile for U.S. wood and energy markets with oil prices rising throughout 2012 and 2013. Those markets became more stable into 2014 with wood markets gaining strength. Economic activity in the United States improved in 2013 and showed strength during the first three quarters of 2014 as evidenced by the increase in real GDP growth to 3.5 % in the third quarter 2014, signaling renewed strength in major sectors of the economy. With stronger GDP growth during the second half of 2014, resulting partly from the continued improvement in the housing sector as reflected in the rise in building permits, increasing employment, and renewed confidence about the financial system, was increased enthusiasm and expectations to expect better economic conditions into 2015. Also, with more new home purchases instead of home refinancing and stronger GDP growth, which is an indicator of employment growth, the recovery of the U.S. economy seems on track. The current inflationary pressures are in decline and unemployment is falling, leading to higher expectations for the U.S. economy. 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 are stronger in 2014), the improving housing sector, and the value of the dollar. U.S. timber exports to China were strong in 2013 and into 2014. The future strength of the U.S. trade sector is also buoyed by surging exports to Mexico. As a result of increased tariffs on wood exports in 2007 from Russia, Chinese buyers have turned to Canada and the United States for wood amid the country's construction rebound. If the surge in exports to Mexico was sustained and if the housing market continues to rebound throughout 2014, 2015 could be a good year for the U.S. wood industry.

The U.S. furniture industry, in retreat since 1999, continued declining in 2011 as low-cost furniture imports and the global economic recession continue to erode the domestic industry market share. Employment in the domestic furniture industry has fallen more than 50% since 1999 (Fig. 3). The United States furniture industry stabilized in 2012 and has shown continued strength into 2014 with production growing about 8% at an annual rate.

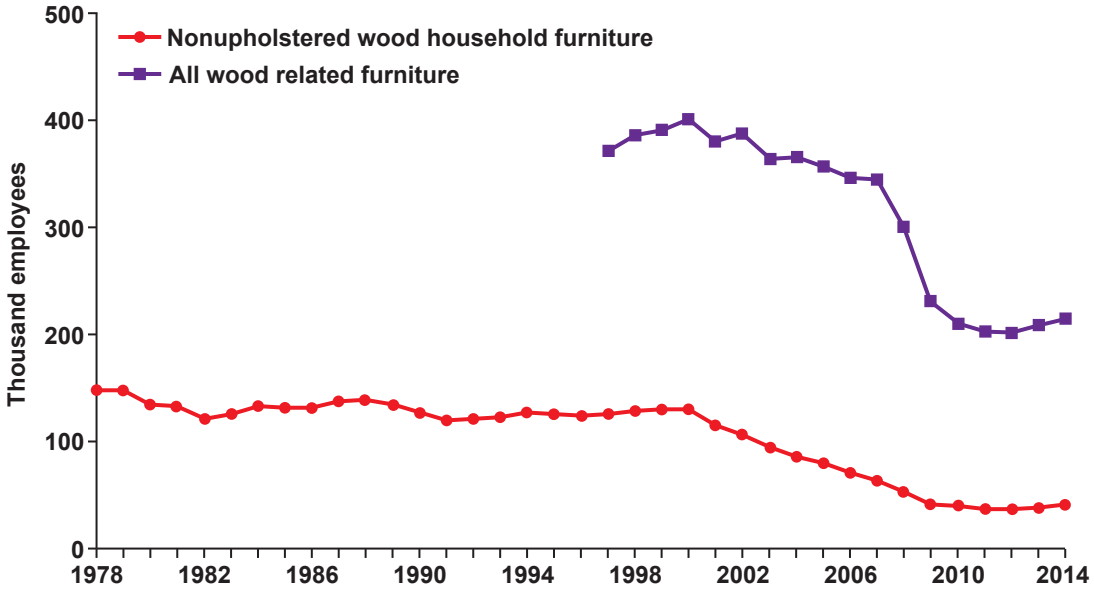


**Figure 3—Employment in the wood furniture industries, 1978–2014.**

## Sources of Information

AF&PA. 2014. Paper, paperboard, and wood pulp—monthly statistical summary. Washington, D.C.: American Forest and Paper Association.

Anguilar, F.X., Song, N., Shiftley, S. 2011. Consumption trends and public policies promoting woody biomass as an energy feedstock in the U.S. Biomass & Bioenergy. 35: 3708–3718.

APA. 2014. Engineered wood statistics, third quarter 2014. Tacoma, WA: APA – The Engineered Wood Association. 9 p.

Elling, J. 2013-2018. Market outlook & regional production structural panel & engineered wood products. APA Economics Report E80. Tacoma, WA: APA – The Engineered Wood Association. 59 p. March 2014.

Board of Governors of the Federal Reserve System. 2014. Statistical releases and historical data. Industrial production and capacity utilization - G.17. Washington, D.C. http://www.federalreserve.gov/releases/G17/Current/table1.htm. Accessed 10/16/2014.

Composite Panel Association. 2014. Particleboard and medium-density fiberboard annual production and shipments. [Annual]. Silver Spring, MD: Composite Panel Association.

Council of Economic Advisors. 2014. Economic indicators. United States Government Printing Office [Monthly]. August 2014. Washington, D.C. [Source for Table 1]. http://www.gpoaccess.gov/indicators/09augbro.html. Accessed 10/20/2014.

EPA. 2010. Prevention of significant deterioration and title v greenhouse gas tailoring rule. Available at: www.epa.gov/nsr/documents/20100413final.pdf. Accessed 11/06/2012.

EPA. 2011a. Fact sheet: proposed rule – deferral for $CO_2$ emissions from bioenergy and other biogenic sources under the prevention of significant deterioration (PSD) and Title V programs. Available at: www.epa.gov/nsr/ghgdocs/biogenicfs.pdf. Accessed 11/06/2012.

EPA. 2011b. Guidance for determining best available control technology for reducing carbon dioxide emissions from bioenergy production. Office of Air and Radiation. March 2011. Available at: http://www.epa.gov/nsr/ghgdocs/bioenergyguidance.pdf. Accessed 11/06/2012.

Federal Reserve Bank of Philadelphia. 2014. Economic research, survey of professional forecasters, third quarter 2014. http://www.phil.frb.org/research-and-data/real-time-center/survey-of-professional-forecasters/. Accessed 10/20/2014.

Howard, J.L. In Process. U.S. timber production, trade, consumption, and price statistics 1965-2011. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory.

McKeever, D.B.; Howard, J.L. 2011. Solid wood timber products consumption in major end uses in the United States, 1950–2009: a technical document supporting the Forest Service 2010 RPA Assessment. General Technical Report FPL–GTR–199. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 41 p.

National Association of Home Builders. Oct. 2014a. Housing economics. Washington, D.C.: http://www.nahb.org/showpage_details.aspx?showPageID=311&sectionID=1163. Accessed 10/21/2014.

National Association of Home Builders. 2014b. Executive-level forecast. David Crowe. Washington, D.C.: National Association of Home Builders. Eye on the economy. http://www.nahb.org/reference_list.aspx?sectionID=869&channelID=311. Accessed 10/20/2014.

United Nations Economics Commission Europe and the Food Agriculture Organization. Forests products annual market review, 2012. pp. 90–94.

U.S. Department of Labor, Bureau of Labor Statistics. 2014. Producer prices and price indexes. [Monthly and annual]. Washington, D.C. http://www.bls.gov/ppi. Accessed 10/15/2014.

WWPA. 2014. Lumber track. [Monthly]. October 2014. Portland, OR: Western Wood Products Association.