



# MISSOURI TIMBER PRICE TRENDS

Oct.-Dec., 2012, Vol. 22 No. 4

Missouri Department of Conservation, Forestry Division

## North Stumpage Prices- (Prices and volume reported in Doyle MBF scale)

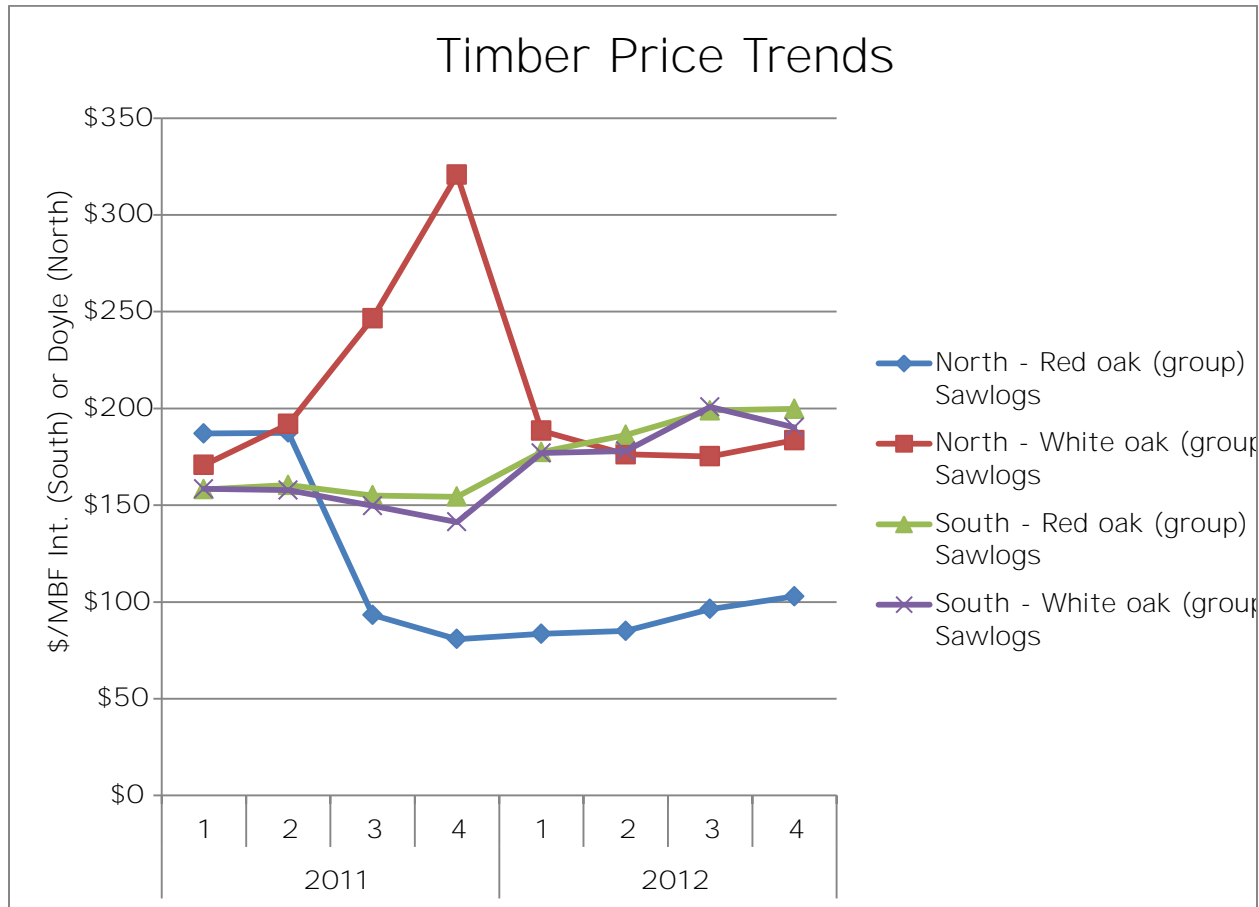
	High	Low	Avg.	Last Qtr.	Last Yr.	Vol.	# of Rpts.
<b>Veneer</b>							
Walnut, Black	\$5,300	\$1,050	\$2,445	\$2,445	\$2,025	38 Doyle-MBF	9
<b>Sawlogs</b>							
Cottonwood	\$70	\$50	\$55	-	-	268 Doyle-MBF	3
Hackberry	\$80	\$80	\$80	-	-	18 Doyle-MBF	3
Hickory	\$220	\$30	\$85	\$85	-	125 Doyle-MBF	11
Mixed Hardwoods	\$315	\$40	\$125	\$85	\$65	1,267 Doyle-MBF	32
Oak (mixed species)	\$310	\$60	\$145	\$140	\$120	1,239 Doyle-MBF	17
Post Oak	\$215	\$60	\$110	\$70	-	22 Doyle-MBF	5
Red oak (group)	\$600	\$35	\$105	\$100	\$80	2,333 Doyle-MBF	21
Soft Maple	\$210	\$50	\$155	\$200	\$275	391 Doyle-MBF	6
Walnut, Black	\$1,250	\$400	\$775	\$745	\$785	159 Doyle-MBF	20
White oak (group)	\$800	\$150	\$185	\$185	\$320	2,891 Doyle-MBF	25
<b>Stave Logs</b>							
White oak (group)	\$500	\$150	\$280	-	\$205	42 Doyle-MBF	3

## South Stumpage Prices- (Prices and volume reported in International ¼ MBF scale)

	High	Low	Avg.	Last Qtr.	Last Yr.	Vol.	# of Rpts.
<b>Sawlogs</b>							
Hickory	\$260	\$60	\$160	\$165	\$85	255 Int. - MBF	17
Mixed Hardwoods	\$365	\$50	\$215	\$190	\$210	679 Int. - MBF	14
Oak (mixed species)	\$250	\$60	\$145	\$125	\$140	2,800 Int. - MBF	24
Post Oak	\$120	\$70	\$85	\$90	\$115	42 Int. - MBF	8
Red oak (group)	\$260	\$110	\$200	\$200	\$155	4,152 Int. - MBF	18
Shortleaf Pine	\$260	\$50	\$155	\$165	\$55	163 Int. - MBF	12
Walnut, Black	\$890	\$85	\$570	\$225	-	37 Int. - MBF	7
White oak (group)	\$260	\$110	\$190	\$180	\$140	780 Int. - MBF	21

## South Salvage Prices- (Prices and volume reported in International ¼ MBF scale)

	High	Low	Avg.	Vol.	# of Rpts.
<b>Sawlogs</b>					
Oak (mixed species)	\$150	\$42	\$111	1422 Int. - MBF	4



Published timber prices are based on a rolling average of reports received over the last four quarters. Refer to the number of sales including a particular species and may sum to more than the number of sales.) Changes since last quarter and last year should be read with caution as the number of reports varies each year and quarter. This report can only be used as a general guide for determining market value of timber. General market and economic conditions, as well as local considerations such as accessibility, terrain, sale size, and tree size and quality also affect the price paid.

Please see the map on page 7 for a definition of reporting regions, which have changed.

- < All prices and volumes are reported in either Doyle MBF or Int.-MBF depending on the region of the state.
- < To convert volume from Int.-MBF to Doyle MBF, divide by 1.2. To convert prices from Int.-MBF to Doyle MBF, multiply by 1.2.
- < To convert from MBF to BF (prices or volume), divide by 1,000.

Foresters reported stumpage prices resulting from 97 timber sales containing 123,370 MBF located throughout the state. There were 60 reports from Private lands and 37 reports from MDC lands. There were 69 reports from MDC foresters, 27 reports from Consultant foresters and 1 report from other foresters. We would particularly like to thank these Consulting Foresters: John Fleming, Art Suchland, Chris Lohmann, Doug Enyart, Ron Lumb, Frank Meyers, Eric Yarnell, Lynn Barnickol, Jason Deschu, Mr. Jenkins and Shelby Jones.

Prices included in this report are reported by foresters for either private land or stateland (MDC) timber sales. Timber prices received for timber sales on Mark Twain National Forest (USFS) can be obtained at the following website: <http://www.fs.fed.us/forestmanagement/products/sold-harvest/cut-sold.shtml>

G f k v q t ø u " P q v g <

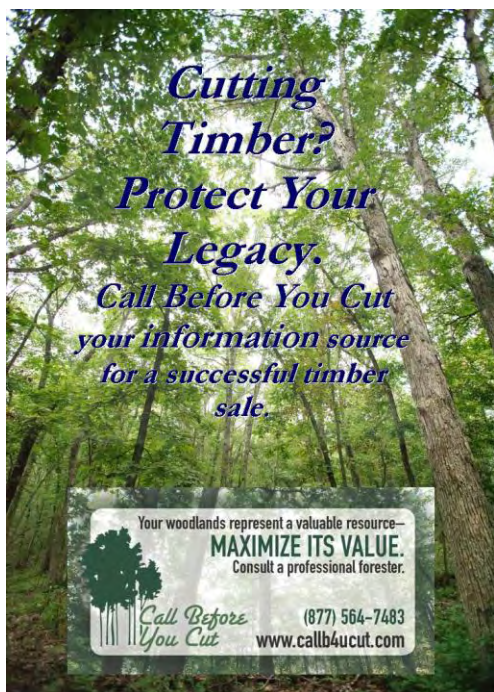
Y g ø x g " o c f g " u q do improve the report for landowners, foresters, and members of the forest products industry. Due to a slow economy, and the voluntary nature of timber sale reporting in Missouri, the number of reports we receive has fallen off in recent years. The result is that some average prices were based on very few reports. Due to these issues, we began calculating average prices based on a rolling dataset of all reports from the past 12 months. The oldest quarterly report drops out as the new quarterly report comes in. This should provide more reports to back up each average price, as well as removing some artificial volatility from the numbers.

We have also reduced the number of reporting regions from three to two (North and South). This will also help to increase the number of reports that go into each published *Timber Price Trend*. Each region will report prices in the scale most commonly used in that region (Doyle for the North Region and International ¼ for the South T g i k q p + " y k v j " p q " ð U v c v g y k f g ö " c v v g o r v liability of the t i g " v data by eliminating error associated with converting from one scale to the other.

We would like to thank the members of MOFRAC who helped with this change in direction, as well as the Missouri Consulting Foresters Association and the Missouri Department of Conservation, both of whom have v c m g p " ð u v g r u ö " v q " g p e q w t c i g " o q t g " t g r q t v k p i " h t q o " v

Remember that one of the most valuable sources for information on log and timber markets is the local Missouri Department of Conservation Resource Forester or your Consulting Forester. Contact the nearest Forest District office for up-to-date, local advice. The Missouri Department of Conservation's Forestry Division, (573) 751-4115, will be happy to provide you with the name and address of the Resource Forester or MDC Regional Office nearest to you. You can locate a Consulting Forester by visiting the Mo. Consulting Forester's Association web site at: [www.missouriforesters.com](http://www.missouriforesters.com) or by visiting the Private Land Assistance page of the MDC website <http://mdc.mo.gov/landown/> c p f " e n k e Conservation Assistance Contractors ö " n k p m 0 "

Tom Treiman and Jason Jensen, Editors



The logger plays a critical role in the harvesting of your timber sale. The Master Logger Certification (MLC) program can make your choice easier. The MLC program can help provide piece of mind for the landowner. Master Loggers are professional, properly trained, and meet the highest standards placed on the industry today. The MLC program is a performance based program that recognizes both training and experience. To find a Master Logger in your area visit the following website: <http://www.moforest.org/MLC/mmldirectory.html>

The Professional Timber Harvester (PTH) program provides four levels of chainsaw safety training and provides instruction on use and k o r n g o g p v c v k q p " q t h c' ð v l g a i g u' ð 'c q p e fi 'g h o g t PTH trained loggers possess the knowledge to harvest your timber while insuring that your residual trees, soil, and property are properly cared for. To locate a PTH trained logger in your area visit the following website: <http://www.moforest.org/loggersindex.php>

Tom Treiman and Jason Jensen, Editors

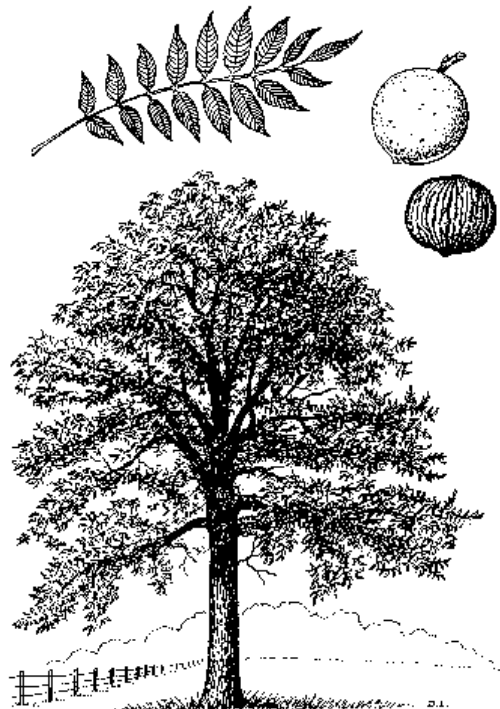
## U.S HARDWOOD LUMBER EXPORTS AT RECORD PACE, 1.2 BBF THROUGH NOVEMBER

Through November, the latest months for which trade data are available, year-to-date U.S. hardwood lumber exports totaled 1.2 billion board feet (Bbf), up 10.5% y/y. 2012 hardwood exports are on pace to equal or surpass the 2006 all-time record of 1.34 Bbf. Exports to Asia grew strongly during the first 11 months of 2012. Shipments to *China* alone were up 52.8 million board feet (MMbf), while *Vietnam, Japan, Thailand* and *Malaysia* collectively increased their purchasing by 45.7 MMbf y/y.

### January óNovember 2012 U.S. hardwood lumber exports, top 15 markets.

Market	2012 YTD MMBF	2011 YTD MMBF	Change MMBF	YTD % Change
China	468.3	415.5	52.8	12.7%
Canada	238.4	221.6	16.8	7.6%
Vietnam	129.1	101.1	28.0	27.7%
Mexico	91.6	81.8	9.8	12.0%
Italy	36.7	52.6	-15.9	-30.2%
United Kingdom	30.6	26.9	3.7	13.6%
Japan	24.5	19.8	4.7	23.8%
Germany	21.5	21.9	-0.4	-2.0%
Thailand	18.1	10.3	7.8	75.6%
Indonesia	15.4	12.8	2.6	20.5%
Malaysia	14.9	9.7	5.2	53.3%
Taiwan	13.5	11.8	1.7	14.6%
Hong Kong	12.4	10.7	1.7	16.1%
Spain	9.1	12.3	-3.2	-25.6%
Korea	6.6	6.4	0.2	3.3%
<b>World Total</b>	<b>1,224.2</b>	<b>1,107.8</b>	<b>116.4</b>	<b>10.5%</b>

Data Source: USITC interactive tariff and trade database, retrieved 1/18/2013.



## Guest Editorial Article

I was recently asked a question which I think is a common curiosity among many people, which is: how does the price of a board foot of lumber go from \$0.30 on the stump to \$6.00 in a store? It seems like an awfully large difference. Where is all the money going? For those of you who are loggers or sawyers, I'm sure it feels like you are getting a much too small slice of the pie. To help answer illustrate this process, I put together the table below to show how this could be happening. The reality is, based on industry data I have reviewed, as well as general observations of what has gone on in the industry, none of the participants (loggers, landowners, sawmills, etc.) are making a killing. To the contrary, many are losing money and going out of business. Ever since the recession started, there has been a glut of supply, which has caused prices to drop along with profit margins for firms large and small. But if that is true, then where is all the money going--that \$5.70/bd. ft. difference between the retail price and the stumpage price?

		<b>Illustrative Value Chain Analysis (Per Board Foot)</b>					
						<b>Gross</b>	<b>Profit</b>
<b>#</b>	<b>Step</b>	<b>Revenue</b>	<b>Purchase Cost</b>	<b>Operating Cost</b>	<b>Profit</b>	<b>Margin %</b>	<b>Margin %</b>
1	Landowner	\$0.30	\$0.00	\$0.12	\$0.18	n/a	n/a
2	Logger	\$0.55	\$0.30	\$0.22	\$0.03	45.1%	5.1%
3	Sawmill	\$0.99	\$0.55	\$0.40	\$0.05	45.1%	5.1%
4	Kiln operator	\$1.81	\$0.99	\$0.72	\$0.09	45.1%	5.1%
5	Wholesaler	\$3.30	\$1.81	\$1.32	\$0.17	45.1%	5.1%
6	Retailer	\$6.00	\$3.30	\$2.40	\$0.30	45.1%	5.1%
	<b>TOTAL</b>	<b>\$6.00</b>	<b>\$0.00</b>	<b>\$5.18</b>	<b>\$0.82</b>	<b>100.0%</b>	<b>13.7%</b>
<b>Note:</b>							
1)	Purchase cost is the cost of acquiring raw material for the step in question and is equal to the revenue of the entity in the prior step.						
2)	Operating cost is the cost of running an operation, including payroll, general and administrative expenses and depreciation of equipment and rent.						
3)	In reality, the profitability of each step above will vary based on the level of involvement of each party in the process and their relative degree of negotiating leverage on parties above and below them in the process (e.g., the power of a sawmill over a logger).						

The analysis above takes that example of a \$0.30/bd. ft. input and a \$6.00/bd. ft. retail price one step further. In business, we call this the "Value Chain". As you move down the table, the product gets closer and closer to the final form. The companies that operate in each subsequent step down the chain must purchase products from the previous step and the price that they purchase at is both the product cost to the current step and the sales/revenue to the prior step. I've assumed about a 5% profit margin for the industry for the sake of this analysis. That feels about right to me and is consistent with data that I reviewed (IBISWorld). If anything, it is high in the current state of affairs. For simplicity, I've assumed that this stays the same in each step of the process. In reality, this won't be the case. Some will be higher, some will be lower, depending on the importance of the step and the negotiating leverage that one step has on other steps (think sawmills vs. loggers).

Ultimately, what this shows is that no one is stealing the others' slices of the pie. So, where is all the money



going? Well, if you look at the "TOTAL" line, you see that total operating costs for all steps involved equals \$5.18, leaving total profitability for every one of only \$0.82/bd. ft. That's not a lot to go around. Who gets the \$5.18? Well, this goes to pay employees, rent for buildings, general overhead costs, depreciation of the equipment (which is significant) and taxes, among other things. This \$5.18 boosts the economy to be sure, but it doesn't end up in anyone's pockets as profits.

I'm sure that some of you may take issue with some of the numbers in this table or the profitability of a given segment. That is okay. This analysis is only meant to illustrate the broader picture of how this all works. It is not meant to be a completely accurate portrayal of the actual profitability of the industry as of right now. Profits and margins change between steps of the process and from year to year, so what is true this year may not hold next year.

One takeaway of this analysis is that you begin to improve your profit margins as you become "vertically integrated," meaning, as you perform more and more steps of the process yourself. For example, a sawmill operator having a logging operation, and possibly timberland holdings, and possibly also a kiln and warehousing facility. This is the case for the large firms like Rayonier, Weyerhaeuser and Plum Creek Timber. With this in mind, is it any surprise that these firms became integrated in the first place, or that they were better positioned to weather the recession than companies with only a single line of business? I don't think so. The more steps of the process you control, not only the more profits you make, but the higher your profit margins (profit divided by revenue) become. Let me give you an example.

Say you are a logger in the table above. You would make a 5.1% profit margin. Now, assume that you are a logger that also owns a sawmill and a kiln operation (i.e., you control 3 out of 6 steps of this process). Your cost of acquiring material is \$0.30/bd. ft. from the landowner. You can sell kiln dried lumber for \$1.81/bd. ft. to wholesalers and your total operating costs for the three steps are \$1.34/bd. ft. ( $\$0.22 + \$0.40 + \$0.72$ ). Therefore, revenue is \$1.81/bd. ft. and total costs are \$1.64/bd. ft. ( $\$0.30 + 1.34$ ), leaving a profit of \$0.17/bd. ft. This equates to a profit margin of 9.4%, which is 84% more profitable than just being a logger! Note that if you controlled all steps of the process, you would make a profit margin of 13.7% (from the "TOTAL" line of the table) versus 5.1% if you only operated in a single line of business.

### **Cost Share Funds Available for Loggers, Landowners**

Loggers and landowners can both benefit from a Missouri Department of Conservation (MDC) pilot cost share incentive program called the Best Management Practices (BMPs) Conservation Innovation Grant (CIG). The grants are focused on encouraging timber harvesters to use good practices that protect soil and water on private land timber sales in 57 counties across the state.

According to MDC Forest Products Program Supervisor, Jason Jensen, the grant is designed to be a partnership between loggers and landowners as they do business together. If approved, the cost share pays loggers \$10 to \$20 per acre and landowners \$5 per acre to implement BMPs on their timber sales.

To participate, Jensen says, loggers should sign up for the cost share program at their local MDC office. The program requires the logger to complete the Professional Timber Harvester course offered by the Missouri Forest Products Association or attend a BMP training class with the Department of Conservation. The deadline for completion of projects is September 1, 2013.

To find a Department of Conservation office, go online to [www.mdc.mo.gov](http://www.mdc.mo.gov). To find scheduled Professional Timber Harvester training classes go online to [www.moforest.org](http://www.moforest.org).

## 4Q12 Market Conditions

By Jason Jensen

As 2012 came to a close, the industry is looking forward to improvements in 2013. Many comments from mills that are looking for timber. There appears to be lots of competition for standing timber in the southeast Missouri Ozarks and many mills have a low inventory for this time of year.

In the southern part of the state, timber markets continue to prop up the industry. However the last quarter has seen improvements in most lumber markets. From comments from mills, they are producing. Prices however still allow mills to make a profit. In the northern part of the state red oak markets remain soft. White oak and walnut provide the bright spot in the timber economy especially in the northern portion of the state. Good walnut prices can be a double edged sword for loggers, and sawmills that they have seen an increasing trend towards harvesting small diameter walnut. A market for a certain product is the best time to harvest the product from an economic perspective. Walnut can increase in value exponentially as it continues to increase in diameter growth. Consult a forester for local market conditions and for reliable information on when to harvest your trees.

For landowners in the River Hills portion of Missouri, markets for maple are probably better than hickory is also in demand at this time. Many mills have discriminated exclusively against these species in the past. My personal thoughts are let grow

the highest quality tree regardless of species. If you have high quality maple, then grow the best maple. You never know where the next market opportunity may come from.

---

### Guest Editorial

By East Perry Lumber Company-Frohna, MO

National and local news reports of improvements in the housing markets have renewed optimism for hardwood lumber industry. Red oak- Flooring markets showed increasing interest in placing large orders, with limited activity in other common. FAS markets remained stable.

White oak Flooring markets also showed interest, while upper grades remained unchanged with reduced activity due to anticipated holiday shutdowns in Europe and Asia. Walnut FAS is stable, while lower grades remained weak.

Hickory All grades are strong with increased demand from export markets.

In general, this quarter was a great time for loggers and landowners to harvest timber. Concerns about winter log supplies and availability affected most segments of the hardwood log market. A variety of markets were available, such as pulpwood, pallet and tie mills, grade mills, stave mills, or log merchandisers, for loggers and landowners to get a good value for their logs and timber.

---

### Supreme Court logging roads case in limbo

January 23, 2013 AFRC Newsletter  
On January 8, the U.S. Supreme Court granted a request by the State of Oregon to be allowed to file further information on the effect of the new EPA rule. All

the parties - the state, industry, and the environmental organizations, had until January 22 to file further briefs. It is unlikely the Court will make any decisions on how to proceed with the case until late February, at the earliest. In related developments, on January 4, the Northwest Environmental Defense Center (NEDC) filed a Petition in the Ninth Circuit seeking court review of the new EPA rule. It is clear NEDC intends to continue to pursue every available avenue to require permits for logging roads. This is entirely consistent with what their attorney told the Court.

---

### December payroll employment up 155,000 (SA), unemployment flat at 7.8%

January 4, 2012 (BLS News Release)

Seasonally adjusted (SA) total nonfarm payroll employment rose by 155,000 in December. For 2012, employment growth averaged 153,000 per month, the same as the average monthly gain for 2011. For December, the unemployment rate was unchanged at 7.8%, the U.S. Bureau of Labor Statistics reported today. In December, the number of long-term unemployed (those jobless for 27 weeks or more) was essentially unchanged at 4.8 million and accounted for 39.1% of the unemployed. Employment increased in health care, food services and drinking places, construction, and manufacturing. Construction added 30,000 jobs in December, led by employment increases in construction of buildings (+13,000) and in residential specialty trade contractors (+12,000). In December, manufacturing employment rose by 25,000, with small gains in a

number of component industries. In 2012, factory employment increased by 180,000; most of the growth occurred during the first quarter.

---

## **December housing starts hit 4-year high, full year starts up 28.1% y/y**

**January 17, 2013 (Census/HUD News Release)**

December U.S. housing starts were at a seasonally adjusted annual rate of 954,000 units, 12.1% higher than the revised November estimate and 36.9% above the December 2011 rate. December starts were at their highest rate since June 2008. Single-family starts in December were at a rate of 616,000 units, 8.1% higher than the revised November figure. Building permits were at a SAAR of 903,000 units in December, 0.3% above the revised November rate and 28.8% above the December 2011 estimate. Some 780,000 (preliminary estimate) housing units were started in 2012, an increase of 28.1% over the 2011 housing starts figure of 608,800.

---

## **November 2012 Housing Commentary**

**By Dalton Alderman and Urs Buehlmann**

November housing construction data was mixed-starts and completions declined and permits indicated a moderate increase. Generally, this is to be expected as we go into the winter season. New and existing house sales, and permits, recorded modest increases- once again these indicators are significantly below long-term averages. The numbers of available new and existing houses for sale continues to decline, are at historically low-levels, and are positives for the construction market. Interest rates remain at historically low-levels but we still have stricter lending standards and

declining real incomes. These might be contributing factors in the continued decline of first-time house buyers (in absolute numbers). The remodeling sector continues to be projected as a promising sector; however, recent data suggests stagnation in remodeling. Projections for 2013 housing starts suggest a very modest increase, in numbers, as compared to 2012. Total start estimates range from 850 thousand to 1.19 million and the range for single family starts are 596 to 820 thousand units. We hope starts do rise, as increases are a boost to the industry and the economy, no matter how small.

We have included several slides that pertained to debt and declining real incomes. Incomes are critical at this point; with prices increasing in conjunction with stricter lending standards these may become a drag on housing even with record high home affordability. Also, how will consumer psychology be affected by the a decline in real incomes? We do not know if purchasing psychology will be affected, but we should have indicators by 2013s end. Government debt is a different matter at this point in time; it may not directly affect the housing market now, but in the future it might. Debt will have to be dealt with sometime as excessive debt is detrimental to economic growth. This has been researched by Economists Carmen Reinhart and Kenneth Rogoff<sup>16</sup> (and others), who demonstrated that when government debt exceeds servicing of debt has a negative growth rate.

The housing market continues to heal and most projections for 2013 indicate modest increases in

starts. In regards to a robust U.S. housing market, our outlook remains unchanged- there remain too many potential negative macro-factors at this point in time for a robust housing recovery. Why?

- 1) Consumer confidence while rising, most report it is fragile,
- 2) a lack of well-paying jobs,
- 3) a sluggish economy
- 4) declining real median annual household incomes,
- 5) strict home loan lending standards, and
- 6) new financing and banking regulations to be implemented in the near future.

---

## **Forecast for the Wood Products Industry, 2013**

**By Bill Conerly, Forbes**

2013 should offer good demand for wood products, with improvement from domestic usage though exports will remain soft. As usual, risks bear considering, including a possible recession in the United States, continued slowing in China, and a significant upside risk that housing recovers even faster than expected. Housing starts are on pace for 750,000 units in 2012 (the December figures have not been released yet). That will be a gain of more than 20 percent from 2011. More growth is almost certainly on the way. Apartment vacancy is tight and rents are rising. That triggers more multi-family starts and leads renter to consider buying. Indeed, buying looks good with mortgage rates as low as they have been in history. Housing prices are starting to edge up, but have not risen enough to limit affordability, just enough to calm fears about buying a depreciating asset. Limitations on housing construction are weak job growth, tight credit standards for home buyers, and developer financing challenges. Nonetheless,



900,000 units should be easy in 2013, and we may even cross over the one million unit benchmark. Other uses of wood will grow at a much slower pace. Residential repairs and remodeling have been stagnant but are likely to improve just a little. Non-residential construction will continue to be moribund. Industrial usage (for goods manufacturing out of wood as well as pallets and crating) has been weak in the past few months but is likely to show a mild rebound in 2013. Rolling the sectors together, this year should be good for wood demand in the United States.

Overseas markets are a different story. The chart shows pretty clearly that China is now key to foreign log demand has dropped significantly. The Chinese economy has decelerated over the past two years, making serious move to stimulate the economy, which is a good sign. However, I have doubts that they can fine-tune their economy any better than we can fine-tune ours.

(Cummings, DGP, DGT, PCP, M, G, J, D, Y, N, G, C, I, G, T, U, in recent years.) Further, the Chinese rulers would prefer to stimulate domestic consumption rather than construction. That implies that Chinese log demand is unlikely to rebound sharply.

China is long on wood than short, but there remain risks. The greatest risk facing the United States economy is a recession triggered by the

global recession. I have written elsewhere, a [recession in 2013 would have mild effects on the housing market](#). China may continue to decelerate, so instead of her demand for our logs stabilizing, it may well continue to shrink. That should concern upstream producers, though it would be favorable for the operating costs of U.S. sawmills.

Business leaders in the industry should be prepared for another risk: stronger-than-expected demand. It sounds good, but unplanned growth presents challenges. Suppliers may not be ready to deliver raw materials, cash holdings may be stretched by the need to pay bills before revenue is received, and skilled workers may not be readily available. Economic contingency planning. (see my video series on [Business Planning in an Uncertain Economy](#), especially the last video about upside risks).

## Could wood biomass help clean up coal-fired power plants?

by [Dan Haugen](#)

Cheap natural gas and flat electricity demand has left the prospects for wood-chip and wood-pellet fuels [barely smoldering](#) in recent years.

But wood biomass could soon have a new role in energy production: cleaning up coal-fired power plant emissions.

A year-old company called [Biogenic Reagents](#) recently completed construction of a \$30 million, commercial-scale production facility in Marquette, Michigan. The company is sustainably harvested wood into a product that can pull mercury out of power plant emissions.

The technology could enable coal plants to comply with forthcoming EPA mercury rules at a relatively low cost.

The process involves a technique called [pyrolysis](#), in which wood is heated in an oxygen-deprived container. Without oxygen, wood undergoes chemical reactions to remove mercury. The left is a pure material known as activated carbon.

[Activated carbon](#), sometimes called activated charcoal, is a porous material that bonds with other materials. Its most common use is in water filtration, everywhere from municipal water treatment plants to the water pitcher in your refrigerator.

The use of activated carbon at power plants is a relatively new idea. A mercury emissions control program at the U.S. Department of Energy's [National Energy Technology Laboratory](#) in Pittsburgh funded activated carbon research for about a decade ending in 2008, when it decided federal support was no longer needed.

Yves Chiriac, an advisor who managed the DOE mercury control program.

### How it works

Activated carbon is an expensive equipment upgrades. Most of the cost is in buying the activated carbon. A fine cloud of exhaust stream, where it bonds with mercury, forming clumps of material big enough to be captured by existing particulate filters. Feeley estimates that activated carbon controls are now installed or planned to be installed on units accounting for about a quarter of the nation's coal-fired generation capacity.

The market for activated carbon at power plants is likely to grow with new federal mercury standards on the horizon.

Kevin Feeley, a consultant and technical research firm in suburban Chicago that closely tracks mercury control technologies.

Coal-fired power plant operators spent about \$50 million on activated carbon in 2010. By 2015, [McIlvaine projects](#) that number will exceed \$500 million. That would exceed the current market for water filtration and more than double demand for activated carbon. The problem, says Biogenic Reagents founder and CEO Jim Mennell, is that most activated carbon is made from coal, through a process that creates mercury emissions itself.

environmental technology, you could actually work on a commercial scale before announcing it to the world. It's really not that I think we are a factor better than coal-

#### Why wood?

based alternative is [far cleaner to produce](#), says Mennell, and it also costs less and [performs better](#) than coal products.

The company hired Stanford Energy Conversions Lab to conduct blind, side-by-side trials that showed it was more effective than two coal-based competitors, he says. It also partnered with a Michigan utility, a non-disclosure agreement, for a full-scale trial at a coal-burning power plant.

activated carbon product was able to reduce mercury emissions by more than 90 percent, hitting levels new [Mercury and Air Toxics Standards](#) that take effect in early 2015.

[Mercury](#) linked to learning, growth and development and reproductive issues. A common exposure is through eating fish from waters contaminated by mercury. Coal-

burning power plants are the largest human-caused source of mercury pollution.

After about a year of operating in stealth mode, Biogenic Reagents is just now going public with their products. Another variation of the recipe produces a wood-based substitute for metallurgic coke, a coal-refining metals and a major source of greenhouse emissions.

could actually scale it up and prove it actually worked on a commercial scale before announcing it to the world. It's really not that I think we are a factor better than coal-

based alternative is [far cleaner to produce](#), says Mennell, and it also costs less and [performs better](#) than coal products.

The company hired Stanford Energy Conversions Lab to conduct blind, side-by-side trials that showed it was more effective than two coal-based competitors, he says. It also partnered with a Michigan utility, a non-disclosure agreement, for a full-scale trial at a coal-burning power plant.

activated carbon product was able to reduce mercury emissions by more than 90 percent, hitting levels new [Mercury and Air Toxics Standards](#) that take effect in early 2015.

[Mercury](#) linked to learning, growth and development and reproductive issues. A common exposure is through eating fish from waters contaminated by mercury. Coal-

announce within a couple of months, with an eye toward expanding the Michigan facility in the next year.

expectation is that we should have a pretty positive reception in the One that could have a pretty positive impact on the environment, too.

*Missouri Timber Price Trends tracks market prices for Stumpage. Reports on the Stumpage Market are received from Missouri Department of Conservation Resource Foresters and private consulting foresters. Stumpage price reports reflect delivered mill prices. These reports should serve as a general guide to track stumpage prices. Landowners should not use this report to replace a timber inventory and marketing assistance as methods of conducting a sale. Missouri Department of Conservation Resource Foresters will be able to provide information on current, local market conditions. Details of all private sales and delivered prices are kept confidential.*

**Missouri Department of Conservation  
Forestry Division Offices**

**MDC CENTRAL OFFICE.....573/751-4115**

PO Box 180, Jefferson City 65102  
 Lisa Allen, State Forester ..... x 3120  
 Mike Hoffmann, Forest Management Chief ..... x 3307  
 John Tuttle, Forest Management Chief ..... x 3304

**CENTRAL REGION .....573/815-7900**

3500 E. Gans Rd., Columbia 65201  
 Susan Troxel-DeWitt, Regional Supervisor ..... x 3478  
**CALIFORNIA OFFICE**  
 410C W. Buchanan St., California 65018 .....573/796-0286  
**CAMDENTON OFFICE**  
 783 Thunder Mtn. Rd., Camdenton 65020 .....573/346-2210  
**FULTON OFFICE . NRCS Office**  
 4549 State Rd. H, Fulton 65251 .....573/592-1400  
**LINN OFFICE - USDA Service Center**  
 1315 E. Main St., Linn 65051 .....573/897-3797  
**NEW FRANKLIN . MU-HARC Office**  
 10 Research Ctr. Rd., New Franklin 65274 .....660/848-2525

**KANSAS CITY .....816/622-0900**

12405 SE Ranson Rd, Lees Summit 64082  
 Mark Nelson, Regional Supervisor ..... x 1239  
**BURR OAK WOODS NATURE CENTER**  
 1401 NW Park Rd., Blue Springs 64015 .....816/228-3766  
**CLINTON OFFICE**  
 PO Box 368, Clinton 64735 .....660/885-6981  
**DISCOVERY CENTER**  
 4750 Troost, Kansas City 64110 .....816/759-7300  
**SEDALIA OFFICE**  
 2000 S. Limit, Sedalia 65301 .....660/530-5500

**NORTHEAST .....660/785-2420**

3500 S. Baltimore, Kirksville 63501  
 Danny Hartwig, Regional Supervisor..... x 6516  
**HANNIBAL OFFICE**  
 653 Clinic Rd., Hannibal 63401 .....573/248-2530  
**KAHOKA OFFICE**  
 RR 1 Box 16A, Kahoka 63445.....660/727-2955  
**MACON OFFICE . Mark Twain Water Quality**  
 2108 US Hwy. 63 Suite D, Macon 63552 .....660/385-6359  
**UNIONVILLE OFFICE**  
 28988 US Hwy. 136, Unionville 63565 .....660/947-2439

**NORTHWEST .....816/271-3100**

701 James McCarthy Dr., St. Joseph 64507  
 Bryan Gragg, Regional Supervisor ..... x 1438  
**ALBANY OFFICE**  
 508 E. Hwy. 136, Albany 64402 .....660/726-3746  
**CHILLICOTHE OFFICE**  
 15368 LIV 2386, Chillicothe 64601.....660/646-6122

**OZARK .....417/256-7161**

551 Joe Jones Blvd., West Plains 65775  
 Gary Oakley, Regional Supervisor ..... x 240  
**ALTON OFFICE**  
 PO Box 181, Alton 65606 .....417/778-6594  
**AVA OFFICE**  
 HCR 71 Box 46, Ava 65608 .....417/683-3628  
**DONIPHAN OFFICE**  
 Route 8 Box 8118, Doniphan 63935 .....573/996-2557  
**EMINENCE OFFICE**  
 HCR 1 Box 177K, Eminence 65466 .....573/226-3616

**HOUSTON OFFICE**  
 1020 Hwy 63 North, Houston 65483 ..... 417/967-3385  
**ROLLA OFFICE**  
 125655 State Route Y, Rolla 65401 ..... 573/368-2225  
**SALEM OFFICE**  
 PO Box 386, Salem 65560 ..... 573/729-3182  
**VAN BUREN OFFICE**  
 PO Box 850, Van Buren 63965 ..... 573/323-8515

**SOUTHEAST .....573/290-5730**

2302 County Park Rd., Cape Girardeau 63701  
 Joe Garvey, Regional Supervisor ..... x 245  
**ELLINGTON OFFICE**  
 Route 2 Box 198, Ellington 63638 ..... 573/663-7130  
**FARMINGTON OFFICE**  
 812 Progress Dr., Farmington 63640..... 573/756-6488  
**FREDERICKTOWN OFFICE**  
 1051 Madison CR 212, Fredericktown 63645 ..... 573/783-5468  
**IRONTON OFFICE**  
 303 S. Main, Ironton 63650 ..... 573/330-6550  
**MARBLE HILL OFFICE**  
 Route 5 Box 129, Marble Hill 63764..... 573/238-2321  
**NEW MADRID OFFICE**  
 PO Box 131, New Madrid 63869..... 573/748-5134  
**PERRYVILLE OFFICE**  
 2206 W. St. Joseph, Perryville 63775 ..... 573/547-4537  
**PIEDMONT OFFICE**  
 Route 4 Box 1002, Piedmont 63957 ..... 573/223-4525  
**POPLAR BLUFF OFFICE**  
 107 Magazine Lane, Poplar Bluff 63901 ..... 573/840-9788

**SOUTHWEST ..... 417/895-6880**

2630 N. Mayfair, Springfield 65803  
 Rod Tucker, Regional Supervisor ..... x 1630  
**BOLIVAR OFFICE**  
 412 S. Killingsworth, Bolivar 65613..... 417/326-5189  
**BRANSON OFFICE**  
 226 Claremont Dr., Branson 65616 ..... 417/334-3324  
**CASSVILLE OFFICE**  
 PO Box 607, Cassville 65625 ..... 417/847-5949  
**JOPLIN OFFICE**  
 705 S. Illinois, Ste. 6B Joplin 64801..... 417/629-3423  
**LEBANON FORESTRY OFFICE**  
 2350 S. Jefferson, Lebanon 65536 ..... 417/532-7612  
**NEOSHO OFFICE**  
 1510 S. US Hwy. 71, Neosho 64850..... 417/451-4158

**ST. LOUIS .....636/441-4554**

2630 Hwy. D, St. Charles 63304  
 Cathy deJong, Regional Supervisor..... x 311  
**MERAMEC WORK STATION**  
 3220 South Hwy 185, Sullivan 63080 ..... 573/468-3335  
**POWDER VALLEY NATURE CENTER**  
 11715 Cragwold Rd., Kirkwood 63122 ..... 314/301-1500  
**ROCKWOODS OFFICE**  
 2751 Glencoe Rd., Wildwood 63038..... 636/458-2236  
**WARRENTON OFFICE**  
 PO Box 157, Warrenton 63383 ..... 636/456-3368

**GEORGE O. WHITE NURSERY .....573/674-3229**

14027 Shafer Rd., Licking 65542  
 George Clark, Supervisor..... x222

