Forecast Of New Wood Crossties: *Outlook Is Conservative*

By Fred Norrell

A low point for tie purchases was reached in the year 2000, followed by increases every year since, averaging 7 percent annually through 2006. However, purchases have fallen slightly in 2007, and future sales could be marginalized as parts of the U.S. economy are showing signs of stress.

This article describes the process by which the Railway Tie Association (RTA) model is used to generate a forecast of crossties. The process begins with an assessment of the U.S. economy and developing a forecast of economic activity for the next few years. Next, one must discover the approximate relationship between changes in the U.S. economy and corresponding changes in the railroad and crosstie markets. This is accomplished by estimating econometric equations. In the case of the RTA model, five such equations have been developed. Finally, one must generate the final output, new wood crosstie forecasts. This is accomplished by taking values from the U.S. economic forecast and plugging them into RTA's estimated econometric equations.

The U.S. Economy

In 2006, we saw moderate performance in the U.S. economy, with 2.9 percent GDP growth. But an abrupt slowdown occurred in the first quarter of 2007 and growth skidded to 0.6 percent. This was due in part to mortgage defaults and a growing inventory of unoccupied housing. Residential construction grew excessively in 2004 and 2005, but has since fallen by 24 percent, with the deterioration continuing through the latest GDP reports (third quarter of 2007). Most importantly, these housing problems are beginning to slow down consumer spending. In real terms, while consumers increased spending by a solid 3.7 percent in the first quarter, this was followed by only 1.4 percent growth in 2007 2Q, then 2.8 percent in 3Q. Interestingly, real GDP has exhibited surprisingly good growth rates (3.8 and 4.9 per-cent in latest two quarters) despite this slow-down in consumer spending.

In the past, RTA has taken results from the Fair/Yale economic forecast model to provide the basis for the forecast used to develop crosstie forecasts. At this time, however, Fair predicts the housing slump to be near its low point, and 2008 GDP is predicted to grow at the healthy pace. These predictions would appear to be optimistic, so RTA looked elsewhere for an economic prognosis.

Thus, this year the outlook that was used to drive RTA's forecast comes from the Federal Reserve System's Federal Open Market Committee (FOMC). This is the organization that sets targets for the federal funds rate and directs the sale or purchase of bonds to implement the interest rate. One of their latest forecasts produced on Oct. 30-31, 2007, calls for a significant slow-down in 2008 (*Graph 1*).

Some of the individual FOMC members have devised their own forecast models, some manage forecasting projects, and each member brings a forecast to the committee. This results in a range of forecasts that is reported by FOMC. From this range of forecasts, certain "central tendencies" are identified out of which a narrower range of forecasts is developed.

RTA has chosen the more conservative/lower values of these central tendencies to drive this crosstie forecast. RTA chose this forecast for three related reasons. First, credit market conditions, including bad mortgages, are seen to be festering with each new media report, and not going away quietly. Second, residential construction continues to deteriorate at a disturbing pace. Third, FOMC forecasts are based on the assumption that the FED does its job well, yet Wall Street observers seem to doubt the FED appreciates the extent of credit market woes and the potential impact on the economy. These circumstances imply a significant probability for tightening credit and sagging investment that could disrupt or slow other markets.

If this forecast becomes reality, more residential construction (and other) jobs will be lost, increasing the unemployment rate from the current 4.6 percent to 4.9-5 percent by the end of 2010, according to the FOMC. Since one forecast assumption is a job done well by the FED, inflation stays tame throughout the forecast.

The RTA Model

The model consists of five equations that attempt to "explain" changes in the crosstie market. The market is divided into purchases by North American Class 1 railroads and purchases made by all others (the "small market"). According to the model, Class 1 purchases depend upon miles of track owned and ton-miles of freight (a two-year average) moved. In recent years, and in the forecast period (2007 to 2010), track is reduced as railroads rationalize, but these negative effects are usually offset by increasing volumes of freight.

The track forecast is based on surveys and industry news. The freight forecast is from a second equation, driven by real GDP, coal shipments by rail, and the price of diesel fuel. The theory is that increased production and increased coal shipments drive up freight. As diesel prices go up, freight shifts from truck to rail. Coal shipments are from the third equation, which indicates increases in coal shipments result as real GDP and diesel prices increase. Diesel price is projected by the U.S. Department of Energy. Forecast details for these variables are displayed in *Table 1*.

The small market is composed primarily of short line railroads as well as industrial

Graph 1 – Real GDP Predictions
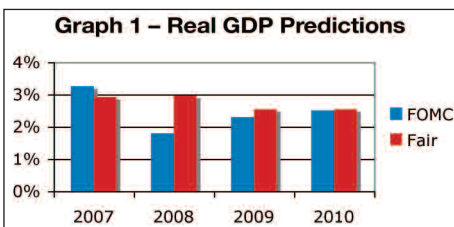
Table 1 — Forecast Summary Thousands Of New Ties							
Year	Real GDP	Real Price of Diesel	U.S. Class 1			New Wood Tie Purchases	PCT
			Coal	Freight	Track		
2004	3.6%	24.3%	1.0%	7.0%	167	14,307	5.4%
2005	3.1%	42.6%	1.6%	2.2%	164	15,029	5.0%
2006	2.9%	12.8%	6.0%	4.5%	162	15,937	6.0%
2007	2.4%	1.2%	5.9%	5.0%	160	16,175	1.5%
2008	1.8%	4.7%	1.6%	0.1%	158	16,496	2.0%
2009	2.3%	-2.9%	2.0%	2.5%	157	16,513	0.1%
2010	2.5%	-1.9%	1.8%	2.3%	155	16,837	2.0%

Note: North American Class 1=U.S. + CN + CP.

and government crosstie purchasers. In the fourth equation, purchases are driven by U.S. nondurable manufacturing output, diesel prices, Class 1 coal shipments, and miles of track released by Class 1 railroads. The theory is that increased production of nondurable goods calls for increased freight and tie purchases; likewise with coal shipments. As Class 1 railroads release track, short lines tend to absorb it and purchase ties to maintain it. Finally, when diesel prices increase, short lines are hurt financially and crosstie purchases decline. The forecast of nondurable manufactures is the result of the fifth equation, which indicates production in this segment is a function of real GDP. Forecast details for these variables are displayed in *Table 2*.

The Crosstie Forecast
Table 1 presents in summary form the forecast for North American Class 1 purchases. First, real GDP slows to 2.4 percent in 2007, followed by a more serious slide to 1.8 percent in 2008. Coal shipments continue to increase, but at a slower pace. Real diesel price increases in 2008 and then falls. Combined, the drivers bring about a deceleration in freight from 5 percent in 2007 to a near stagnation in 2008. Class 1 track is assumed to follow recent trends, and is reduced by 1 percent in 2008. Combined, the effects of changes in freight (from 2007 and 2008) and track cause crosstie purchases to grow 2 percent in 2008. Growth in purchases approaches stagnation in 2009 and achieves a moderate acceleration in 2010 due to freight growth.

Table 2 captures the main elements of the small market. U.S. nondurable manufacturing has grown very slowly for some years, and moderate future GDP growth constrains its prospects; production shrinks by 0.2 percent in 2008, followed by very slow growth. Coal shipments are moderate, as are projected track acquisitions, providing little upward push for crosstie maintenance. Diesel prices increase in 2008, taking budget dollars away from crossties. Crosstie purchases are reduced only nominally for three years, especially 2008, until a modest increase in nondurables lifts the market.

Table 3 and *Graph 2* combine market segments and represent total crosstie purchases from RTA members.

The first thing to note in Table 3 has to do with dates. The "years" shown are not quite calendar years; they are 12-month periods

ended in approximately November. Class 1 crosstie installations for a given calendar year are reported, and they correspond to purchases made approximately one month prior. Thus, all purchases numbers are moved back approximately one month in time, and will not match with calendar year purchases. In the 12 months ended November 2007 (latest as of this writing), purchases were 20.97 million, or 2 percent higher than the forecast for 2007. A weak December 2007, though, is expected by many in the industry, so the final number for 2007 total purchases should be in the 20.6 million range as illustrated.

Perhaps the most dramatic characteristic of the forecast is a sharp downturn of small market purchases in 2008, when investment tax credits are assumed to revert to prior rates. Secondly, Class 1 purchases essentially remain stagnant, although at quite healthy levels, during the next two years. The combination of these two market segments, thus,

reveals slight declines from 2007 through 2009 with a turnaround in 2010, when increased Class 1 freight (in 2009 and 2010) stimulates maintenance needs.

Of course, should the short line tax credit be revived or other impetus occur from regional railroad expansion plans such as with the DM&E tie demand, growth could occur in 2008.

As of this writing, however, an overall market deceleration is predicted and can be traced to a slowing of the national economy, evident in GDP, coal shipments and rail freight. As the graph above reveals, purchases are forecast to level off after six years of impressive growth. This is accentuated with uncertainties regarding the health of the U.S. economy and the fact that some business planners find themselves in awkward positions as it relates to business investment. Thus, the RTA model generates a forecast for tie demand that has been based on a conservative outlook. §

Table 2 — Small Market Purchases

Year	Non-Durable Manufactures	Real Price of Diesel	US Class 1 Track Acquired	Coal	New Wood Tie Purchases	PCT
2004	2.1%	24.3%	1.8	1.0%	3,695	27.6%
2005	0.8%	42.6%	3.5	1.6%	3,776	2.2%
2006	0.7%	12.8%	2.2	6.0%	4,709	24.7%
2007	0.1%	1.2%	1.6	5.9%	4,383	-6.9%
2008	-0.2%	4.7%	1.6	1.6%	4,018	-8.3%
2009	0.1%	-2.9%	1.6	2.0%	3,950	-1.7%
2010	0.2%	-1.9%	1.6	1.8%	4,044	2.4%

Table 3 — Forecast Summary (thousands of new wood ties)

Year	Class 1 Purchases	Small Market Purchases	Total Purchases	PCT
2004	14,307	3,695	18,001	9.3%
2005	15,029	3,776	18,805	4.5%
2006	15,937	4,709	20,647	9.8%
2007	16,175	4,383	20,557	0.4%
2008	16,496	4,018	20,514	0.2%
2009	16,513	3,950	20,463	0.2%
2010	16,837	4,044	20,881	2.0%

Graph 2 – New Wood Crosstie Purchases (000)