

A Most Disruptive 25 Years

By Jim Gauntt, RTA Executive Director

A case could be made that the last 25 years have been the most disruptive time in American history. At the very least, we can say with confidence that the pace and magnitude of disruptive change and the concomitant economic events of the time are unmatched across our nation's history.

While there are other periods of time that may rival or exceed the last quarter century, I believe when you review the evidence you will agree with this thesis. To understand the reasons this period may be the most significant in disruptive terms requires looking back at a critical moment for our industry.

RTA was born in 1919. At that time, more than 125 million wood crossties were installed annually across America, 75 percent of which were untreated. Many were still hand-hewn. The fledgling treating industry, along with sawmill mechanization and automation, was just beginning to gain a footing after Allied victory in WWI.

One might think that the transformation of tie production to 100 percent modern treating practices would have been complete within a couple of decades. On the contrary. A long path was ahead for untreated wood tie usage.

It's hard to imagine, but U.S. railroads last reported placing untreated ties in track some five decades later in 1963. By then, railroads had come under tremendous financial pressure. Passenger revenue had all but dried up as airplanes and the interstate highway system had blossomed into major competition for passenger travel and freight movement.

Yet, even in the face of these competitive pressures, the Interstate Commerce Commission (ICC) maintained strict control over railroad pricing. The toll levied on railroad balance sheets by this lack of operating cash for investment spelled demise for many railroads.

Even forced mergers, bringing scale to passenger travel in the Northeast Corridor, couldn't save the Penn Central from bankruptcy. This forced the U.S. government to step in and create Amtrak in order to maintain rail service for passenger travel.

Over the next 17 years, the term "standing

derailment" became part of railroad vernacular. One 1970s article about the Indiana Railroad coined the new term to describe the phenomenon of a parked train falling off the rails. The cause? Maintenance dollars for track rehab were so measly that support for railcars would fail even though there were no dynamic forces being applied.

Fortunately, in 1980, the Staggers Act replaced ICC pricing burdens with a new deregulated landscape. This began a period of highly productive contraction and consolidation and created a renaissance for railroads the likes of which Abraham Lincoln, the father of the first U.S. transcontinental railroad, never could have imagined.

After a few years of sloughing off under-maintained track, which bore fruit in the form of an invigorated short line railroad network, the decade from 1985-1995 was a period of intense Class 1 consolidation. And that is where my opening arguments begin for the next quarter century.

In 1996, the Burlington Northern merged with the Santa Fe, and the Surface Transportation Board formally replaced ICC. These events just preceded the last major U.S. rail consolidation event.

In late 1996, Norfolk-Southern and CSX began to wage a fierce battle for Conrail. These two roads officially split Conrail's assets in 1997.

Sidebar alert: Coincidentally, this is right about the time when RTA's new hire, me, along with a dedicated team of members developed and implemented RTA's strategic vision and mission statement. The period between 1997-1999 marked a significant time of transition for both RTA and railroading.

I've often marveled at how fortunate I was to claim a front row seat to what would soon unfold, not only for RTA and railroading but also in what was an emerging brave new

world for us all.

I will take only a paragraph or two here to remind RTA members that they, too, are fortunate to have such a focused organization on point for their interests. RTA continues its work to this day focused on maintaining the vigorous health of the wood tie industry.

While RTA serves many different components of our industry, after 100 years, we remain keenly driven. Using the tenets established by the strategic plan, education, market data, communication and administration of dedicated events, the association is unrivaled in its unique and focused role for one primary product.

Please also consider that the principles established during the late 90s, that is, to work in consensus to allow a rising tide to lift all ships, have helped our association thrive throughout many disruptive ups and downs over the past 25 years. Now back to the exhibits.

As Conrail began to be absorbed by the eastern Class 1s, a process that took until June 1999, the next major stages of track divestiture by Class 1s ensued. But, before the rail renaissance began to bear its first big crop of benefits, the dot-com bubble burst, and our nation and the world—all of us—had to endure the gut-wrenching events and aftermath of 9/11.

The dot-com bubble is estimated to have cost the world's investors \$8 trillion. Virtually overnight, the NASDAQ plummeted from 5,048 to 1,084. Dot-com companies valued in the hundreds of millions of dollars vanished in a blink of the eye.

This precipitated the Economic Growth and Tax Relief Act (EGTRRA) of 2001. EGTRRA was a mid-year sweeping piece of tax reform legislation that created notable retirement vehicles such as the Roth IRA. It might also have been successful in preventing a recession from occurring in 2001-2002 if it had not been for the events on Sept. 11, 2001.

That day forced us to come to grips with the reality that terrorism was now the true enemy of the entire free world. It threw the country not only into multiple conflicts, some of which persist to this day, but also ►

into an economic recession. 9/11 also damaged the American psyche and, in some ways, we are still reaping the political and societal shifts sown on that terrible day.

This birthed yet another major tax reform bill called the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) of 2003. JGTRRA was needed to help the American economy achieve growth again. But, with growth came unanticipated effects. Some have suggested that if JGTRRA had been enacted with a sunset provision earlier than 2010, the bubble that created conditions for the 2008 financial crisis would not have formed in the first place.

The period between 2000 and 2004 not only saw these events unfold but also saw the short line industry begin to gain legislative clout. This culminated with the enactment of the now-named 45G Short Line Infrastructure Investment Tax Credit. As we now know, this spurred demand for 1 million additional new wood ties annually and shored up the under-capitalized and under-maintained feeder network to the Class 1s. A positive disruption for us, but a major change nonetheless.

The 45G tax credit started a 14-year run for the short line industry and its suppliers. The economic value of the increase in wood tie installations is estimated to be \$150 million or more. It also created opportunities for companies like Genesee & Wyoming to become powerful players in short line operations. And, as we have seen and Genesee & Wyoming CEO Jack Hellmann noted at the recent 2019 RTA Annual Conference, this allowed enormous value to be generated for this class of roads that make up 25 to 30 percent of the railroad industry. *See Tie Purchases 2003-2018 table.*

If this case isn't convincing yet, please come a little further back to 2004 as we explore the next hanging chads in the road. Remember that little disruption? An entire presidential election was held in abeyance until decided in judge's chambers.

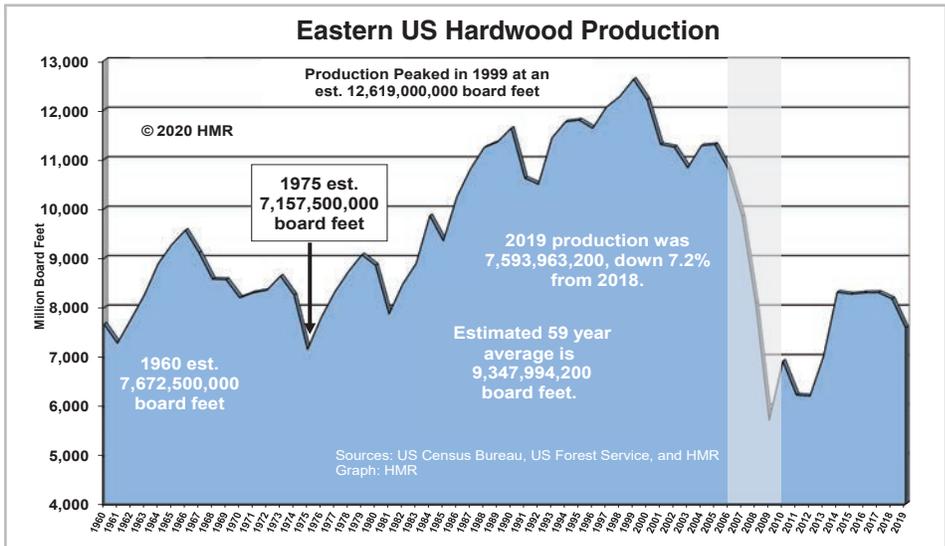
The first years for commercialization of wood tie dual-treatments by Canadian National and Norfolk Southern were 2004 to 2005. The remainder of railroads likewise adopted this new technology throughout the remainder of the decade. This was the first meaningful change in preservation options for wood ties in several decades.

Tie Purchases 2003-2018

Year	Total Tie Purchases (000)	Class I Tie Purchases (000)	Small Market Tie Purchases (000)	Small Market share of Purchases
2003	16,645	13,578	3,067	18.4%
2004	17,966	14,007	3,960	22.0%
2005	18,967	14,729	4,238	22.3%
2006	20,809	15,937	4,872	23.4%
2007	20,584	15,285	5,298	25.7%
2008	21,025	16,761	4,264	20.3%
2009	19,464	16,216	3,248	16.7%
2010	19,685	16,379	3,306	16.8%
2011	21,968	16,525	5,443	24.8%
2012	23,087	16,968	6,119	26.5%
2013	24,462	17,131	7,330	30.0%
2014	22,678	15,931	6,746	29.7%
2015	24,385	16,566	7,818	32.1%
2016	24,319	16,531	7,788	32.0%
2017	23,329	15,929	7,400	31.7%
2018	21,361	15,489	5,872	27.5%

The short line industry burgeons following Class 1 consolidation and tax credit enactment.

Graph 1



Shaded area illustrates precipitous drop in production during the Great Recession. Source: *Hardwood Market Report*.

Lest we forget, however, just prior to the journey into the next abyss, hurricanes Charley, Frances, Jeanne, Ivan, Dennis, Emily, Katrina, Rita and Wilma threw combination punches at industries in the South during 2004-2005.

Following these calamities and recovery efforts, we began to believe we could sleep more easily again. Nope. The Great Recession appeared in 2008 and destabilized the world economy for at least the next decade. With this cataclysmic occurrence came

devastation to the stock market, the housing market and, more importantly, to the hardwood sawmill industry.

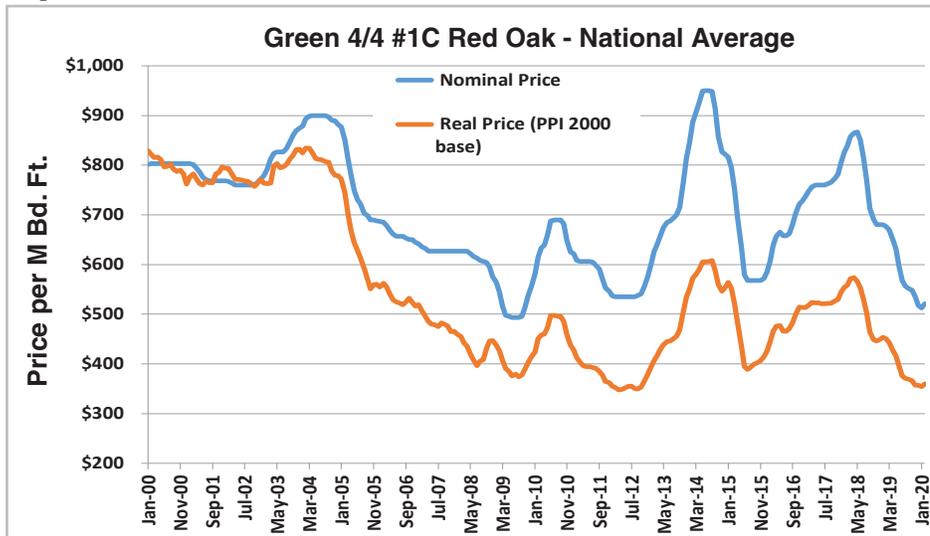
This industry, which at its peak was producing nearly 14 billion board feet in total supplies, including Eastern and Western production and imports, was brought to its knees in just three short years. *See Graph 1.*

At the bottom of the well, and after a loss of 35 to 40 percent of production, the industry was struggling to produce and sell

6.7 billion board feet of sawn hardwood products. Like a slow-motion train wreck, the market flipped on its head, and industrial hardwood products, pallets and rail ties,

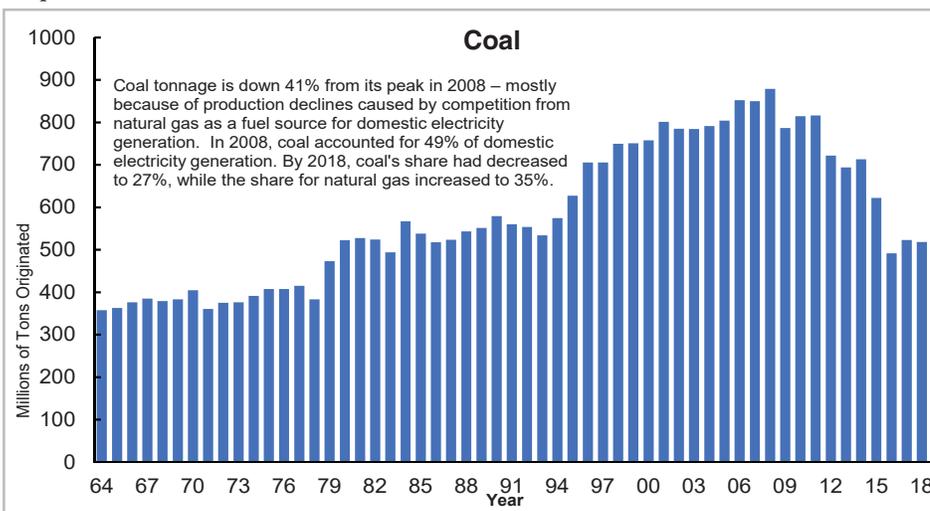
went from 40 percent of hardwood output to 60 percent. The amount of lost grade and flooring lumber product production was stunning.

Graph 2



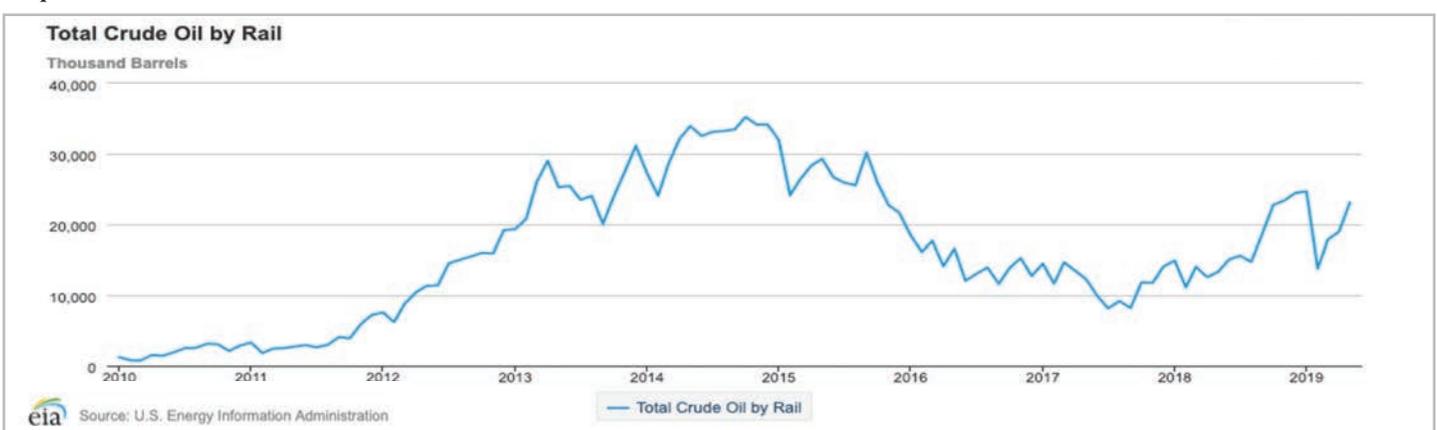
Source: *Hardwood Market Report*

Graph 3



Source: Association of American Railroads

Graph 4



Source: U.S. Energy Information Administration

As the economy struggled to recover, China took advantage of the opportunity the recession provided to run off with our domestic hardwood cabinet, furniture and flooring industries. While this relocation of manufacturing provided unexpected life-support to the ailing sawmill community by boosting U.S. hardwood lumber production to serve the burgeoning Chinese middle class and manufacturing base, it quickly moved the value-added segment of the hardwood industry overseas. As this transpired, many rural, small-town businesses and communities were damaged.

Today, as a result of these body blows, Real Prices for hardwood lumber products are approximately 30 percent lower than they were 20 years ago. A noted USDA industry analyst has suggested that the forest products industry is the worst performing segment of the U.S. economy over the last decade. This is not a sustainable situation, and the industry once again faces permanent loss of capacity. *See Graph 2.*

Among the waves of disruption came major growth in railroad coal shipments, which peaked in 2010-2011. This prompted significant rail CapEx spend in order to service the increasing appetite for coal. Then, that market was systematically pummeled into a shadow of itself. *See Graph 3.*

Then, growth in crude by rail (CBR) picked up some of the slack from suffering coal shipments, until it too faced deep cuts prompted by plummeting oil prices. *See Graph 4.*

Next, we saw growth in intermodal. While this helped rail traffic, trade tensions ultimately led to only moderate growth in that mode for railroads. *See Graph 5, next page.* ▶

Will growth in chemical shipments be enough to stabilize and grow the market without trade resolution? Possibly—if growth continues as expected.

See Graph 6.

So many wheels were turning, and the disruptions kept coming fast and furious.

Of all the disruptive grenades lobbed into the pit, it may be argued the one that turned the world on its head was the boom in technology innovations. Exhibit A: Remember that the iPhone was introduced a mere 10.5 years ago. Could anyone imagine how transformative smart devices, streaming, the web, and the cloud would be?

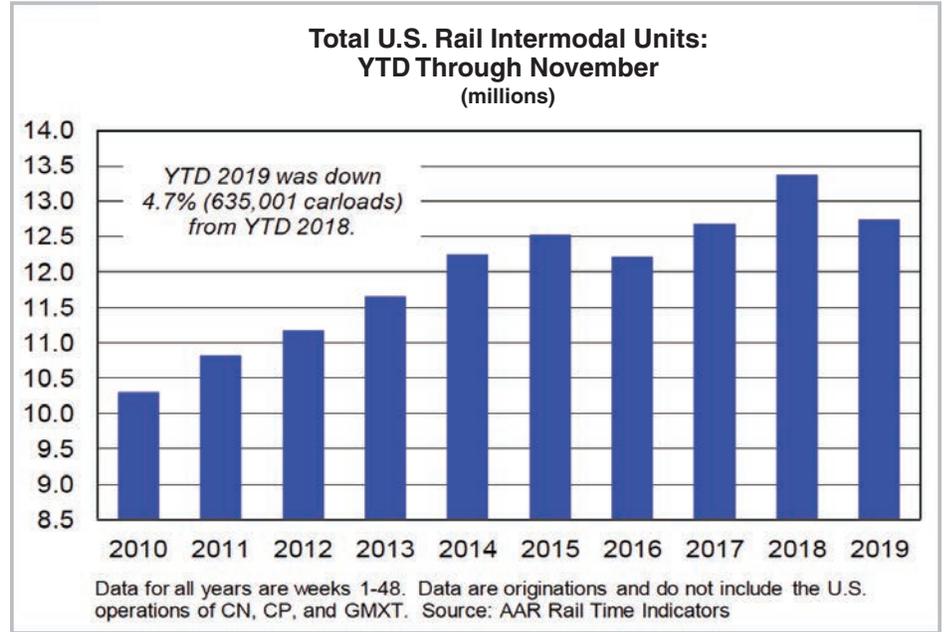
Then, also, could anyone have imagined the amount of available capital that would be removed from railroad investments in other areas by the unfunded mandate of Positive Train Control, or the technology that had to be invented and installed to provide it? Is some of that technology already being disrupted and now heading toward obsolescence by what may come with 5G and the pace of innovation in communications?

How about new systems such as GRMS and now GREX's Aurora X-Ray scanning system for improving track inspection and maintenance strategies? Or drones, or automated-scanning, self contained real-time-mixing vegetation control driven by artificial intelligence (AI) algorithms? How those technologies and big data are increasing cost efficiencies is nothing short of incredible.

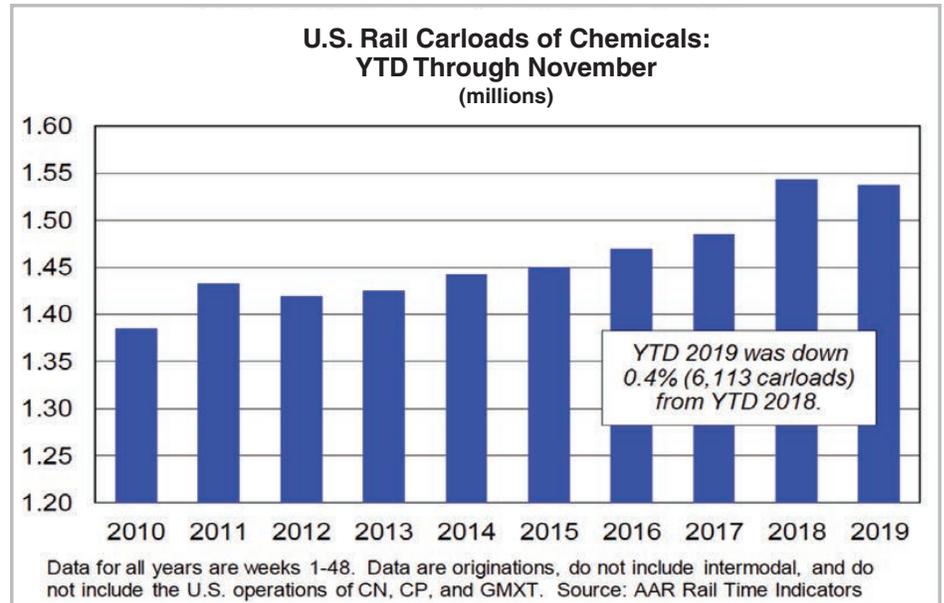
What's next on the tech menu is drifting inexorably into the treating industry. Big data may beget AI-driven tie inspection in the plants one day. It may even change jobs at the plants from eyes-on jobs to information technology jobs. How will that play out?

The next big ones for the digital world are certainly going to be 5G and block chain. One example for 5G communications is that the Defense Advanced Research Projects Agency (DARPA) has sponsored innovation in the next generation of combined AI and 5G. A recent article in Technology Review noted the long-term concern for bandwidth over the airwaves as the 5G revolution takes hold. This is of particular interest to first responders and defense operations in crowded venues and cities.

Graph 5



Graph 6



To that challenge, DARPA is seeking to develop NextGen smart devices that use AI to scan for open, clear frequency bands that can auto-connect similarly enabled devices just to assure communications don't go down when vitally needed in emergencies. More is certainly in the future for 5G/AI-combined innovation. Will that trickle down to manufacturing and freight movement?

By the way, if you haven't read much about DARPA you should browse for it. It's remarkable how this agency drives so many futuristic advancements. My

favorite is a blood and plasma filter that can remove Ebola and other viruses using dialysis. Look up the company Aethelon Medical, stock symbol AEMD, which owes its genesis to DARPA. How many other disruptive technologies are out there like this?

We've already seen what improvements in treating technologies can do for the treated wood tie. For one thing, the data show that average wood tie life should increase from 30+ years to exceed 40 years. Maybe we are already beginning to see some of those

benefits accrue already. Maybe Aurora is scanning ties and finding incremental benefits to lifespan as early as five to eight years into their lives in track.

All this suggests that the wood tie will continue to be the material of choice indefinitely. That's a big change from 1995 when I came into the industry and the predictions of concrete or steel or composites taking meaningful market share from wood drove the conversations.

Doubt it, counselor? I submit to you the next exhibit: 2018 AAR data, where the Class 1s reported that 97+ percent of new their installations were wood, not alternative materials.

More advances in treating technology have come along as well. New preservatives and those under investigation in long-term plots at Mississippi State University suggest more tweaks and options for this 150-year-old industry in the future. Wood ties boring? Hardly.

This article will end before getting into the weeds on disruptions caused by politics, coronavirus, trade wars, impeachment, the Middle East, China or Russia. But, if you review these exhibits, I don't see any conclusion you, as jury, could come to other than this advocate is correct.

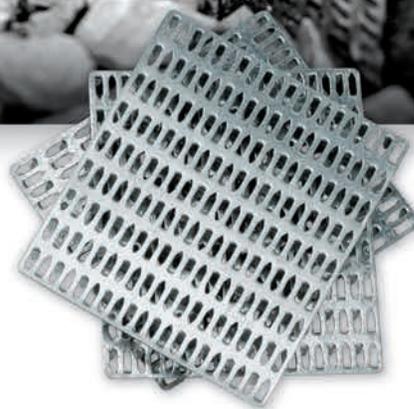
What disruptions will the next 25 years bring? That's not the best question. The best one is at how great a clip will the next disruptions be faced? Certainly, as we have seen with smart devices, politics and trade, the pace is picking up. Maybe the next decade will match the last 25 years in disruptive events. Maybe the next 12 months will.

Whatever plays out, consider yourself privileged. You also have a front row seat for what comes next.

Before I ask one last question, I wish to say, in conclusion, that I have been honored to serve as your executive director for 25 out of the 101 years RTA has been serving our members. As the show goes on, rest assured we will continue on our mission to keep the wood tie vibrant and the number one choice for track applications.

Now, the ask. Did I make the case? ■

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