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THE TOWER BUSINESS: AN INVESTOR VIEWPOINT

Rural Broadband Service

Systemic Changes for Safety

Test Equipment

Antennas

FCC Tower Lighting Penalties

March 2015 /// Volume 12 /// No. 03



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03

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It's in the Money

You don't even have to ask where it's all going to end. Apparently, it will never end. The spending, that is, to boost the capacity of mobile networks so they can carry the ever-increasing amount of traffic.



The worldwide shift from basic-feature phones to smartphones, combined with the continued growth in tablets, a resurgence in laptops with tablet-like capabilities and expanding machine-to-machine (M2M) applications, are key factors supporting the increasing smart traffic trend, according to Cisco Systems.

Visual Networking Index

In February, the company released an update to its Cisco Visual Networking Index Global Mobile Data Traffic Forecast for 2014 to 2019. Cisco says that in 2014, 88 percent of global mobile data traffic was smart traffic with advanced computing and multimedia capabilities and a minimum of 3G connectivity, and that the figure is expected to rise to 97 percent by 2019. By then, 3G networks will support 44 percent of global mobile devices and connections, and 4G networks will support 26 percent of connections, although 4G networks will generate 68 percent of the traffic.

The forecast projects a nearly 10-fold growth in global mobile data traffic over the next five years.

The growth puts pressure on the mobile network operators while

handing opportunities to the wireless infrastructure providers.

It takes capital and plenty of it to satisfy the appetite for consumer use of wireless communications. Fortunately, capital appears to be abundant.

Raising Cash

Verizon is raising \$15.6 billion by selling assets, including rights to its towers, and guess what? Two-thirds of the amount is for landline assets, lest we forget the value of wired connectivity. Frontier Communications is paying \$10.54 billion in cash for the landline assets, and American Tower is paying \$5.056 billion in cash for rights to 11,324 towers and ownership of about 165 more. Verizon spent \$10 billion for radio-frequency spectrum in the latest FCC auction. The remaining \$5 billion it just raised could be used to buy its own stock.

AT&T, which spent \$18.2 billion in the auction, is selling some data centers worth \$2 billion. In 2013, it sold its towers to Crown Castle for nearly \$5 billion and some wireline assets to Frontier for \$2 billion. AT&T is buying wireless assets in Mexico for nearly \$2 billion.

Some tower company leaders say it takes about two years for new spectrum to translate into leases for tower space. Right now, it's in the money. But by 2017, it could be in the air.


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Showtime

I jumped from a wintry mix in northern Virginia and went to Orlando, Florida, for the NATE Unite convention. I had to forego

2015's first AGL Regional Conference in beautiful Long Beach, California, last week to stay home and watch the snow fall.

Bummer. Well, at least I'm not spending the winter in New England this year. Many feet of snow, and some of my poor little microsites say it was -27 degrees F last night.



Tower Sale

Verizon deciding to sell towers is still causing quite a bit of stir. It makes a lot of sense for Verizon. Having an extra \$5 billion to put against the AWS-3 spectrum bill the FCC is about to send makes a lot of sense. Don't expect much to change. You already know the folks at American Tower, and nothing about the towers themselves is physically changing. As with any large trading of assets, at most you would expect additional legal work, such as property titles and leases, and some busy work replacing some elements such as monitors, lighting and security with equipment more familiar to the American Tower operations team. There would be no material change.

The sale of Verizon towers to American Tower is completely analogous to the sale of AT&T towers to Crown Castle. Say you have an apartment building that does not reflect your primary business, and someone

is willing to give you top dollar for it. Do you sell? Heck yeah.

NATE Unite

Poolside update from NATE in Orlando: It's 84 degrees and sunny. That is all.

JP Jones of Tower & Turbine Technology, chairman of the NATE OSHA Relations Committee, invited me to attend a meeting. The committee is working diligently to develop training standards for climbers, crane operators and other jobs involving communications facilities. It was really nice to watch the standards-making process in action again. I used to participate in a number of IEEE and TIA standards bodies. These activities take considerable personal and corporate dedication. Everyone participating in the activities dedicates countless hours, volunteering their years of expertise and hours away from family and paying customers to create standards that everyone believes will benefit all in the industry. It is selfless dedication.

Along with the NATE STAR (Safety Training Accountability and Reliability) initiative, I am impressed and thankful for the work NATE is undertaking.

Safety Training

It was a lot of fun to see once again everyone who participated in our tower climber's training course this summer. I know that to anyone who climbs for a living, it looked like a corporate team-building outing gone wrong. However, the experience and hands-on knowledge gained in three days left an ongoing impression on a

number of us who crossed the line from just taking pictures and writing about it to at least having done it, even if for only three days. I promise to use what I learned to stress the importance of proper training and the difficulty of the job. My hat's off to everyone whose feet leave the ground.

Sarah Palin

On a just plain silly note: I had my picture taken with former Alaska Gov. Sarah Palin. Watch for it in next month's column. Gov. Palin gave the keynote luncheon speech at NATE Unite. I understand that her speech raised a lot of eyebrows; however, she did a perfect job of sharing her experiences using communications systems to build infrastructure in Alaska, one of the harshest U.S. environments. She was fun and funny and serious all at the same time. I've usually been on the other team, but I could not have more respect for anyone who is willing to do what it takes to run for office, adopt a position and put themselves out in public, fighting for what they believe. That is part of what makes this country great. My hat is off to her and to NATE for securing such a rewarding keynote speaker. This is NATE's 20th year. My congratulations to everyone who has made the association such a success.

Rich Biby, Publisher
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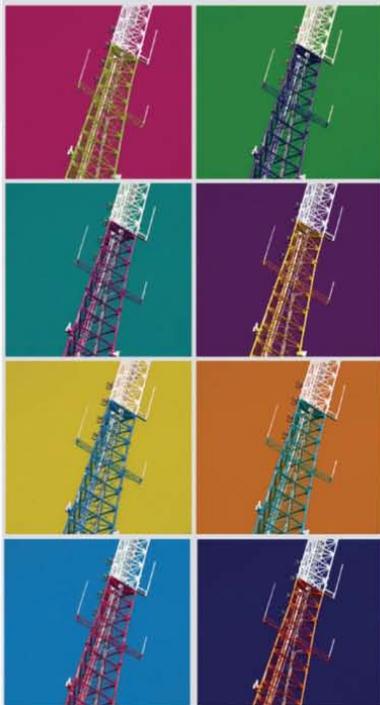
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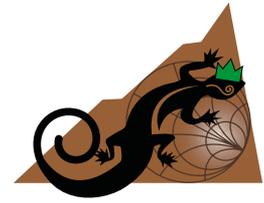
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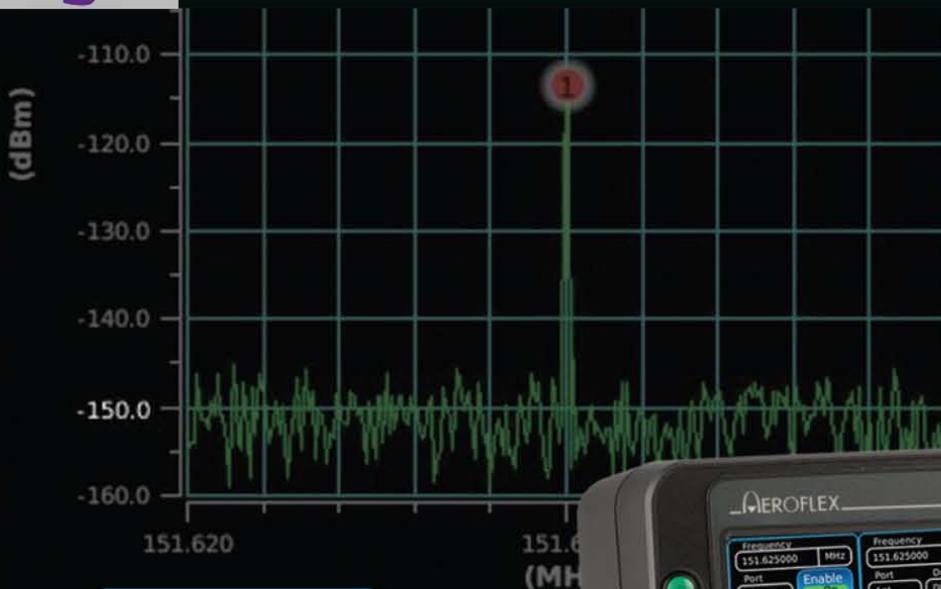
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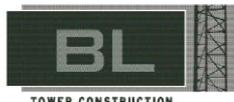
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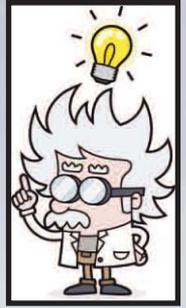


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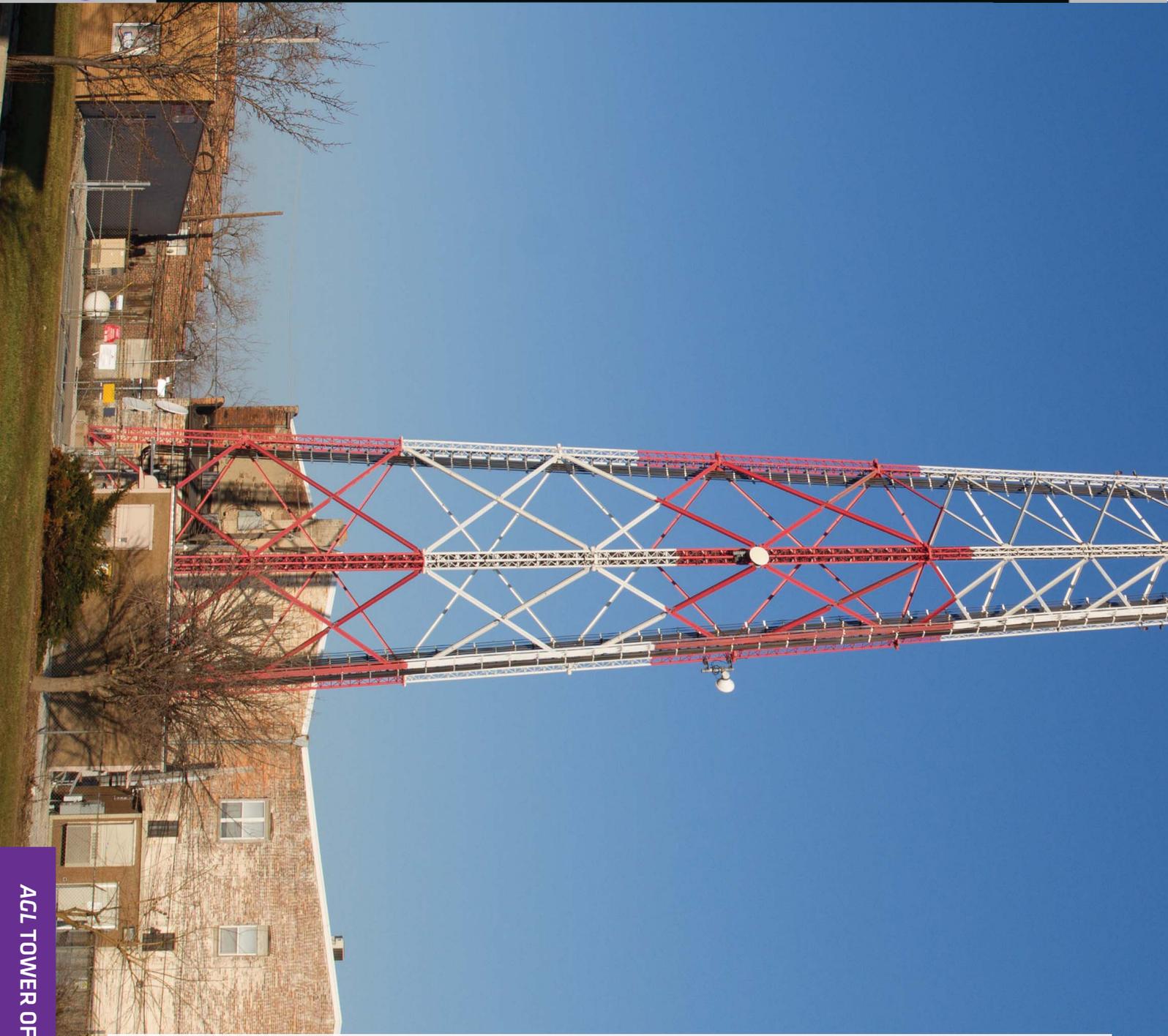
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TYPE

SELF-SUPPORTING LATTICE

YEAR CONSTRUCTED

1995

LOCATION

TOLEDO, OHIO

Photography by Don Bishop



agl
ABOVE GROUND LEVEL

MARCH 2015

AGL TOWER OF THE MONTH

FCC Tower Lighting Penalties

By J. Sharpe Smith

The FCC issued final judgments concerning penalties for several Notices of Apparent Liability (NAL) for Forfeiture and Order that had been issued for violations of tower regulations.

The FCC imposed a penalty of \$8,000 against **ACS Wireless** for failing to monitor its tower lighting, failing to properly light its antenna structure in Anchorage, Alaska, and failing to notify the FAA of a light outage. In November 2013, the FCC Enforcement Bureau's Anchorage office issued an NAL proposing a \$10,000 forfeiture.

ACS did not deny the violations but requested a reduction in the penalty.

A penalty of \$8,000 was assessed against **Kemp Broadcasting** for failing to monitor and exhibit required lighting on its antenna structure in Moapa, Nevada, and for failing to notify the FAA of lighting outages. Kemp did not deny the violations, for which the Enforcement Bureau's Los Angeles office issued an NAL in February 2014, but Kemp requested that the NAL's proposed \$14,000 forfeiture be reduced.

Ohana Media Group was penal-

ized \$6,000 for failing to properly light its Anchorage, Alaska, antenna structure and notify the FAA of a light outage. Ohana did not deny the violations, which were cited in February 2014, but asked that the penalty be reduced from the NAL's original figure of \$10,000.

The FCC penalized **Duhamel Broadcasting Enterprises** \$8,000 for failing to properly illuminate its antenna structure in Rapid City, South Dakota, and for failing to notify the FAA of the outage. The FCC reduced the penalty from the \$10,000 that a NAL issued in June 2014 originally specified.

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How Rural Carriers Can Offer Economical Broadband Service

A software-defined networking, 4G-LTE Evolved Packet Core solution gives rural carriers an alternative for offering broadband service and helps them defend their market shares while differentiating their services from competitors.

By Eric Lekacz

Nearly 99 million Americans, roughly one-third of the U.S. population, lack access to

advanced broadband connectivity, as revealed in the FCC's "Eighth Broadband Progress Report," published in

2012. Whether people are residing in, working in or just visiting rural or urban communities, having ready access to

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broadband services is a basic requirement in today's daily routine. In an effort to narrow this gap, rural-based service providers are searching for new delivery models that must be both sustainable and cost-effective in their entire serving areas. These carriers understand that the services can represent a new business opportunity and can play a key role in enabling greater integration with the regional and global economies.

Carrier Challenge

It's not a question of demand. The adoption rate in rural communities among those who are provided service choices can typically exceed 60 percent, especially as U.S. smartphone penetration exceeded 70 percent in 2014. For a rural carrier, offering broadband connectivity means delivering 4G LTE-

based solutions. However, finding an economically viable, carrier-grade, standards-based solution suitable for the longer term remains a challenge. Without a broader customer base to generate enough revenue and to allow distributing the substantial up-front capital costs of deploying and managing these networks, all too often carriers may conclude they need to compromise on service offerings, think short term or attempt to charge more than customers are willing to pay. Although the FCC is attempting to address some of these potential problems, rural carriers have an immediate need to solve the deployment challenge, all the while keeping an eye on the future.

Solution

The challenge of bringing next-genera-

tion broadband connectivity to rural areas isn't new. Carriers have tried various approaches with mixed results. One example is a carrier program that offered to share its broader network resources with rural carriers, together with leasing them the radio-frequency spectrum, so the rural carriers could focus more on building out their own LTE infrastructure. Yet even without spectrum costs in such an arrangement, carriers still would face the formidable exercise of sourcing the upfront capital for building out and operating their own LTE infrastructure. They also would have a limited ability to define and roll out services tailored to their markets.

An alternative for rural carriers is to use a software-defined networking (SDN), 4G-LTE Evolved Packet Core solution that makes use of the advan-

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tages of new approaches to traditional architectures. One such solution, called mNET, is highly scalable and has enough flexibility to be deployed in greenfield environments or as a complementary core component in an existing 4G infrastructure to reuse the carrier's investment. Already, several LTE radio access network vendors have completed successful interoperability testing with the mNET SDN Evolved Packet Core solution to ensure compatibility when it is deployed in these environments. The 3GPP-compliant solution not only sup-

ports wireless and fixed broadband service requirements outdoors and indoors, but also provides the framework to define new service offerings needed for the long term. It helps the rural carrier defend its market share and differentiate its services from competitors.

The SDN Evolved Packet Core solution supports local wireless LTE services, wireless LTE roaming, fixed LTE broadband access, wireless local loop and user equipment relay.

In addition, the favorable economics of the SDN Evolved Packet Core

solution can deliver substantial capex and opex savings to carriers when compared with alternative legacy solutions. The SDN Evolved Packet Core solution allows a carrier to quickly monetize its investment, paying only as it scales the business, while providing the flexibility to define and deliver services as its particular market dictates. Deployment activities with the SDN Evolved Packet Core solution and multiple rural carriers have already started.

Conclusion

Rural carriers can successfully mitigate economic, technical and operational service delivery challenges by deploying innovative solutions such as an SDN Evolved Packet Core solution. ExteNet's mNET SDN Evolved Packet Core solution not only meets current LTE-based service requirements, but also provides the capability needed to evolve and differentiate a service offering. Carriers can quickly monetize their investments and simultaneously install the infrastructure components necessary to deliver advanced services that fit present and future needs.

Today, regardless of location, ready access to broadband services is no longer a nice-to-have option, but a need-to-have basic utility. With nearly 99 million Americans still lacking some type of accessible and reliable broadband connectivity, rural carriers have the potential to quickly capitalize on this opportunity while affecting their communities for the long term.

Eric Lekacz is executive vice president of business development and strategy at ExteNet Systems. The company offers a software-defined networking, 4G-LTE Evolved Packet Core solution called mNET. Visit www.extenetsystems.com.

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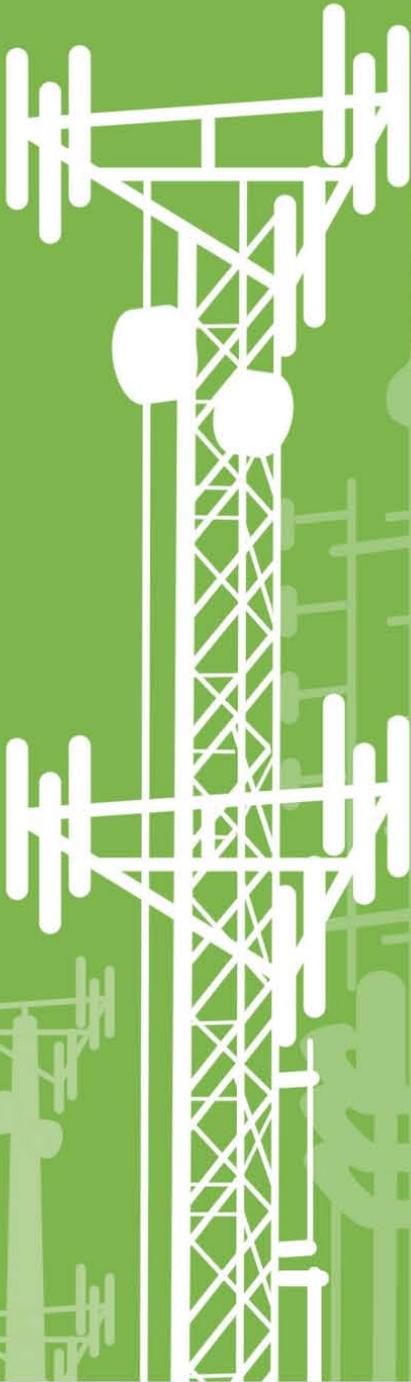
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The Tower Business: An Investor Viewpoint

The end of 2015 may see a tipping point with small cells being used to solve wireless network carriers' capacity problems, but towers won't go away. Small cells will augment and supplement them.

By Don Bishop

At the Tower & Small Cell Summit in Las Vegas in September, John H. Neff, partner at Akre Capital Management, spoke at a session led by Ric Prentiss, managing director at Raymond James & Associates. Akre Capital Management manages nearly \$4 billion across a mutual fund, a partnership and separate accounts. The company manages highly concentrated portfolios with low turnover. Neff said Akre's analysts and portfolio managers try to measure twice and cut once. "The tower business is one in which my firm has experience since 2002," Neff said. "Some of our clients have a 70-cent cost basis in American Tower stock. I joined the firm about five years ago, and have been gratefully following towers ever since."

What follows are Neff's remarks from the session, edited for length and style.

The investments we look for are what we like to call compounding ma-

chines. A compounding machine combines three elements. First, a terrific business model with durable competitive advantages and high returns on the owner's capital. Second, it is managed by people with equal parts skill and integrity; one without the other doesn't mean a lot. Third, there should be ample opportunities to re-invest free cash flow back into the business at those high internal rates of return. When all those elements are in place, which is rare, it creates a sort of flywheel that we call a compounding machine. The tower business offers terrific examples.

I don't think I've come across many other businesses that take as many pennies per dollar of revenue and translate it into owner economics and do so with long-term contracts, pricing escalators, and low counterparty risk.

The real estate investment trust (REIT) metric of adjusted funds from operations (AFFO) does a pretty good job of articulating owner economics. We're expecting mid-teens growth in

AFFO per share from our public tower company investments. We were buying American Tower in the summer and fall of 2013 at an estimated 15 to 16 times AFFO per share. We got that opportunity in the wake of the Fed Chairman Ben Bernanke uttering the word "taper" (which tanked virtually all the REITs) and the Muddy Waters short report. The value now is about 20 times, which I don't think is stretched.

The way we look at valuation for public tower businesses is the multiple of price to adjusted AFFO. The adjustment we make to AFFO is to subtract the stock compensation expense. I understand stock comp can fluctuate and affect the comparability of different periods, but it represents economics that don't accrue to me as an outside shareholder, so I'm not going to capitalize it by leaving it in there.

Capital Allocation

The beauty of dividends is in the eye of the beholder. Many people like



John H. Neff, partner, Akre Capital Management, at the Tower & Small Cell Summit. Photo by Don Bishop

dividends. Some tower company managements focus on the dividend and on driving the payout ratio higher. Personally, and this relates to my previous statement about reinvesting, I would much rather see the company retain free cash and reinvest it organically into the business than pay it out as a dividend. Doing so means compounding our capital not only at a faster rate but more tax efficiently as well.

The land under the towers represents one reinvestment opportunity for tower owners. For the big tower companies, land leases represent their largest cash expense, so acquiring the land under their towers both secures the tower rights and drives long-term margin expansion. In recent years, some of the tower companies have taken to becoming landlords themselves, acquiring land under other peoples' towers, collecting rents with escalators and incurring minimal capital expenditures and perhaps revenue share with the

tower owner. It's not the same return profile as putting up a tower, but it is an incremental reinvestment opportunity for the tower owners.

The settlement between American Tower and Tristar may have closed the chapter on the most aggressive land aggregation strategy. No one else was replicating Tristar's tactics and hopefully no one else does soon. The big tower operators now are all wide awake to that risk.

International Expansion

Tower companies that invest outside the United States are somewhat like pioneers, and pioneers sometimes get arrows, but often they get the best land. The learning curves that American Tower and SBA Communications are moving up internationally should pay off for shareholders over the long term. It's a real advantage for a tower company to have the knowledge and experience to take a global purview of the tower assets available for acquisition and to invest in the highest risk-adjusted return opportunity. A year or so ago, I looked at the wireline penetration in some of the countries in which American Tower was operating. The wireline penetration in these countries was 14 percent on average. These are countries and economies that are not going to start stringing copper. There will be a wireless future. For a tower company to invest internationally in an intelligent way is a great reinvestment opportunity.

DAS and Small Cells

Returning to the subject of reinvestment, there have been some

notable differences among how tower companies see opportunity in small cells. Although no one questions that DAS has a role, there are interesting nuances, such as indoor versus outdoor DAS. Different companies have a clear preference for one over the other. For American Tower, which has been in the DAS business for a long time, DAS is about 2 percent of its revenue. The first question is: To what extent does DAS become important? And the second question is: To what extent is there an attractive business model in providing it? In particular, that's the real question about non-DAS small cell solutions. I think folks are trying to figure that out.

I have to believe if there's a cheaper, more efficient, more effective way to offer comprehensive coverage and capacity than macro towers, the carriers would embrace it. Periodically, a new technology garners some buzz. But there's a huge difference between viable lab technology and viable field technology. So far, the difference has been important for towers.

John H. Neff is a partner at Akre Capital Management. His email address is jneff@akrecapital.com. This article is based on remarks he made at the breakfast meeting of Raymond James & Associates led by Ric Prentiss, managing director, at the Tower & Small Cell Summit in September in Las Vegas. The Summit is owned by UBM, and it is collocated with Super Mobility Week, owned by CTIA. The next Summit is Sept. 9-11, 2015, at the Sands Convention Center in Las Vegas.

YEAR OF THE CLIMBER

YEAR OF THE CLIMBER

By Don Bishop

Jan. 28 marked the first widely reported story of injuries to workers at a cell site in 2015. Emergency medical service workers transported two men from a Viaero Wireless cell site in Scottsbluff, Nebraska, to a hospital after a gust of wind caused a section of a tower under construction to topple, pinning them underneath. One man's leg was injured, and the other man reported shoulder pain. In a prepared statement, Viaero spokesman Mike Felicissimo said, "This portion [of the tower] was 15 feet tall and one worker was 4 to 6 feet up the portion, while the other was 8 to 10 feet. Both were using all required safety equipment and all safety protocols had been adhered to, as Viaero reported to OSHA. A strong gust of wind blew the portion over onto the ground, along with the workers. Other Viaero workers on the site immediately responded, providing assistance to the two men until EMTs arrived at the scene within minutes." Wind was reported at 25 to 30 mph, gusting to 50 mph.



Make Systemic Changes to Stop Fatal Accidents Among Tower Workers

If the chief executives of major carriers and other major companies decided they would change the culture in the wireless infrastructure industry today, it would have an immediate, universal effect.

By Dave Anthony

Safety may be the common mantra of all of the components of the wireless infrastructure industry, but it's not the common practice. The industry has a systemic problem that fosters unsafe performance. The pursuit of profit outpaces the pursuit of safety. At every level, the base decision is made by how little we can pay to get the job done.

None of the deaths among tower workers had to happen. They cannot be viewed as inevitable or even as collateral costs of doing business. Instead, they should be viewed as a failure of all of us to provide a safe working environment and for safe execution of the work itself. Everything we do can and must be done safely. Providing a safe working environment takes total commitment on the part of every executive in every component entity of this industry.

I'm fully responsible for the safety of my employees, and I take that re-

sponsibility seriously, but I'm limited in what I can do for anyone else, and that's where we all come together. Why are tower workers dying from job-related injuries on a regular basis? I tell my employees that the most dangerous thing we do is to drive to our job. If they do everything they're trained to do and everything they're taught to do, they cannot get hurt on my jobsite.

I firmly believe that, and we have evidence of that over 31 years of doing business. Such a high level of safety can be achieved, but it requires a commitment from the highest level right on down to the newest worker on your team. Tower work is not for everyone. It is for a select few who can commit themselves to doing it properly and doing it safely, who will follow the instructions, who will obey, who are determined to excel and who can brave the elements and the re-

sponsibilities of the work itself.

Why are these guys dying? There are three primary reasons from my point of view: insufficient worker training, insufficient enforcement of rules and standards, and a failure by the competent person on the site. The introduction of training material is not training. Acquiring levels of proficiency is required. Insufficient enforcement of rules and standards allows accidents to happen. Accidents are preceded by a failure of the competent person on the site. Every one of our jobsites is supposed to have a competent person. The competent person is supposed to recognize every hazard that can face our workers and to resolve those hazards or stop the work.

Enforcement and supervision require collaboration. As an employer of tower workers, I can't do it all myself. I need OSHA. I need the cus-

tomer I'm working for to be involved in the safety of our personnel. We have to ensure this because not everybody is playing with a full deck of cards, and we know the reality of what we're facing out there.

Unruly Industry

We're basically an undisciplined, unruly industry. Many people fail to do the right thing. It takes the right people doing the right things to achieve the best results and keep workers safe while getting the job done right. There is much room for change and improvement. It has to take place with the climbers and with their employers at the highest level.

The problem is going to get worse because of the densification of the spectrum. Densification in the marketplace directly correlates to densification on the tower. The tower now is a much more hazardous environment than it was 10 years ago. Towers now support many objects that pose difficulties for climbers to move around and to move past. It complicates access to and from the jobsite. It adds to fatigue.

Understand one thing: When a tower climber is doing his job, he's under stress from the time he leaves the ground to the time his feet hit it again. Many times, he's up there all day and sometimes way longer than he ought to be. Contractors must become disciplined. Tower climbers are people, not machines. Customers must understand there are limits to what they can drive the contractors to in every situation.

Tower Modifications

We're beginning to see towers col-

lapse as a result of improperly done modifications. Tower collapses will increase if we don't change the way we approach modifications. Preventing modifications from causing tower collapses requires collaboration among the tower owner, the design engineer and the contractor. A tower hand is a bolt-turner, not an engineer. The process, the methodology, must be vetted.

Of all the contractors you might have under your employ, maybe 25 percent, at best, are capable of making a modification change or a modification upgrade properly and safely. Yet, all of your contractors are bidding. A tower owner might have 12 contractors bidding a tower modification project. The low bid is not the way to go on something as important as tower modifications. There has to be a qualification process.

The problem of keeping tower workers safe is not something that contractors can solve on their own. If contractors, tower owners, carriers and OSHA collaborate, we can solve the problem. The whole idea with safety is to identify the risks and then to mitigate the risks.

Free Climbing

When it comes to tower workers free climbing, that is, climbing the tower without being tied off to a suitable anchor point or a fall-arrest system 100 percent of the time, the majority of the tower workers out there are free climbing. For them, it's a sport. And they don't know what they don't know about the risk. The problem can be magnified when their employers will take on

jobs that the workers are not prepared and equipped to perform. Nevertheless, the workers will be sent to the jobsite and will have to try to figure it out in the field despite their lack of preparation.

The tower workers who are dying are dying because they just didn't know any better. It's what the workers do not know that is killing them. It's obvious. They're not doing this on purpose. We have got to help them. They're innocent and they need our protection. We have the power to do it, but we have to quit protecting our bottom lines and start protecting the workers.

Low Bids

A safety-conscious approach can affect your bottom line when competitors that cut corners offer lower bids. It affects the volume of business I do. But I'm going to do it right, or I'm not going to be in the business. That's a judgment that I made long ago when I started. I started as a niche player, repairing the messes that other people made, and one thing led to another. I had enough experience when cellular started to come into play that I got to build the first cellular towers in my locality. That was a real thrill, and we enjoyed every minute of it.

In those days, the majority of the towers were guyed. All of those sites and builds were a lot of fun. We learned from every one, and we worked as a tight unit. I was out there with my workers, so I knew what was going on. I knew who was doing what. If I had a nonperformer, I could see that,

and I could train them. As my company grew, we added supervisory layers. You have to be reinforcing safety with new people and passing it on down the line.

Yes, safety costs money, but I sleep well at night. I know that every one of my workers, every day, every moment he's on the towers, is 100 percent tied off. It is achievable. Meanwhile, we roll up on sites all the time where others are working and find crews on the tower free climbing. It often turns out to be the low bidder whose crew drove in from three states away to do the same job that I was right there, an hour away, to do, but didn't get the job.

Safety is a process and an issue that we have to embrace, and we have to change from the top down or we're not going to make any headway because we will still face the same issues in the future if the judgment is that profits are more important than worker safety.

Safety Culture

If you want the best people working for you so you can achieve the best results, you have to treat them with dignity and respect. That means they need to spend time at home with their loved ones. Why do we get in our trucks and drive thousands of miles past all the work that's out there, yet we don't work in our own backyards, make it a profitable experience and allow our employees to be home with their families on the weekends?

When they're gone week after week after week, you lose control

over the work habits of those men and women. And that's one of the prevalent problems in our industry. The reason I do what I do, manage an enterprise, is that I get to hire men and women, and I get to train them in skills and craftsmanship. No matter how long they work for me, when they leave for whatever reason, they are better equipped to face the work day than they were when they came to me. I want them to spend time at home. I want them to be with their families. I want them to be informed and molded by their families. You can't have that if you're on the road hours and weeks and months at a time.

Time Pressure

When a customer exerts pressure to complete a project faster, it's something I have to manage. It's my responsibility to manage time pressure and to say to my customer, "What you're asking for can't be done in that time frame." With safety issues, it's my responsibility to say, "What you're asking us to do is not safe, and we won't do it that way. Here's a counterproposal." Many contractors — friends of mine and acquaintances through NATE — have heard customers say, "Well, if you won't do it that way or if you won't do it in that time frame, we'll find somebody else."

That's why we say that even when we're doing our best, it's not going to be enough to change the systemic problem. The systemic problem starts at the top of the industry. If you've read

this and you haven't felt a nudge in your own heart to change the way you operate, then I have to ask you, have you been paying attention? I want to challenge you. If you haven't felt that nudge for you personally to operate differently, what's the purpose of our getting together in meetings to discuss safety?

We're facing a tsunami of deaths in this industry as we look to the future. This is the place where we are and it's the place that we made. We have to change the scenario.

Carriers, what can you do to enhance safety in the tower industry? Carefully hire companies that can demonstrate that they're paying the price to hire the right people, that they give them the proper tools and training, and that demonstrate that they hold themselves and their employees accountable. Then, pay them what they're worth. Quit trying to distance yourself from liabilities. Instead, diagnose the liabilities and remedy them.

If the chief executives of any major carrier, any major company, any company at all decided that today was the day they would change the culture in this industry and stop the next tragedy from occurring, then I believe it would have an immediate and universal effect almost overnight. Our mantra is safety. Our practice is profits. We have to change our practice to safety.

Dave Anthony is president of Shenandoah Tower Service, Staunton, Virginia. His email address is davea@shensvc.com.

Product Showcase: Antennas

Antenna Portfolio for Present, Future LTE

The expanded UltraBand ultra-wideband, outdoor macrosite antenna portfolio from **CommScope** helps wireless operators deploy LTE now and be prepared for future spectrum and technology roll outs. The antenna portfolio is intended to increase the flexibility of operators to support present and future multiple frequency bands with potentially only one antenna per sector. The product prepares operators for future spectrum and technology while supporting legacy 2G and 3G networks. The portfolio includes more models of the Argus UltraBand base station antenna system, including the version with an internal smart bias tee that received the Network Product Guide's 2013 Gold Award for innovation.

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Antennas with Low Visual Impact

CommScope's Metro Cell line of antennas, mounts and enclosures is designed for minimal visual impact and maximum network performance. Built to easily accommodate all on-site equipment, the line includes an aesthetically pleasing radome shield that can be painted to match its surroundings, a variety of poles and concealment options suited for an urban environment and a form-factor less than one meter in length. The antennas support



one to three sectors. They have quasi-omnidirectional or specific patterns and down-tilt and upper sidelobe suppression to maximize performance.

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www.rfsworld.com

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and AGL measurements for a multitude of directional-antenna systems. A universal antenna mounting system allows for quick antenna attachment and release. The user-friendly tool is easy to transport up any tower. It also features the ability to save antenna installation measurements for record-keeping and reporting, and it is easily accessible over USB.

www.3ztelecom.com

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www.alphaantennas.com

Multiple-sector Antennas

Alpha Wireless' low-visual-impact antennas feature AltaFlex technology that conceals multiple-sector antennas inside a low-diameter cylindrical housing. The use of a single compact radome to house a full suite of antennas makes the antennas suitable for applications in which planning

and zoning restrictions limit standard antenna deployments. The antennas are designed to be easily mounted on rooftops and on street furniture such as flagpoles and lighting fixtures. The products are available in antenna configurations to suit most applications. The products also feature RET control, azimuth panning

and connector access panels.

www.alphaantennas.com

Collocating Mount

The **TerraWave** collocating mount for access points and antennas is designed to simplify



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deployments and conceal valuable access points and unsightly external cables. The mount features an innovative base that attaches to the AP and mounts the external antenna directly to the AP, creating a unique, collocated solution. The product

features the added benefit of eliminating the need to run cable along the ceiling; it gives the installer a single mount to install, saving time and money.

www.terrawave.com

spectral capacity.

www.terrawave.com

MIMO Stadium Antenna for High-data-capacity Venues

Galtronics' Extent D5778i 60/60-degree MIMO (multiple-input, multiple-output) communications panel antenna



line is for use in high-capacity venues such as stadiums, arenas, speedways or campuses. The outdoor DAS and stadium antennas offer high-density venue owners options that include the Extent D5501i 30/60-degree and Extent D5777i 30/30-degree beamwidth antennas and the D5778i 60/60-degree antenna. Coupled with the company's Pear product line for in-building wireless DAS networks, it creates a product portfolio for high-capacity venues and in-building DAS. The antennas provide precise, consistent and fast roll-off patterns for a clear-cut footprint and low interference. They handle as much as 250 watts of input power. They are optimized for multicarrier systems.

www.galtronics.com

Dual-band MIMO Antenna

The **TerraWave Spotlight 6 dBi** MIMO (multiple-input, multiple-output) communications antenna offers high gain and a narrow bandwidth adequate capacity in venues such as stadiums, casinos and convention centers with large concentrations of network users. The antenna enhances capacity by focusing fewer users per access point to reduce interference and maximize the use of available

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“The Nevada Wireless Association supports the efforts of the Tower Family Foundation and has made them a recipient in our annual charity golf tournament. Best of luck to the Foundation as you continue to grow and help those in need!”

Chris Wener

Nevada Wireless Association President

“As a climber with 17 years of experience, I've seen firsthand the hurt and the pain caused by the loss of a fallen friend and fellow tower climber. I am grateful and humbled to know there is an organization that has resources to assist tower climbers and their families during times of need.”

John Gates

Tower Climber from ATS

“I want to thank everyone involved for making this happen! Synergy Concepts will be donating to the Tower Family Foundation and encourages other companies in the industry to donate as well.”

Russ Chittenden

Vice President of Synergy Concepts, Inc.

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www.towerfamilyfoundation.org

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