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Features

26 **AGL Tower of the Month**

Even Congress understands that dependable cell coverage sometimes means allowing a tower in your backyard. This temporary CDMI Lite-Site monopole was used to augment National Mall capacity during inauguration ceremonies. Visually discreet, the tower was installed in a single day.

28 **OSHA Standards Promote Tower-worker Safety**

Alex Marcoux

How times have changed. Compared with the training, equipment and procedures of the 1980s, today's requirements involving tower climbing show the strides made toward eliminating injuries and fatalities.

30 **How KVTN Erected Its 1,200-foot Tower**

Rolin Lintag, CSTE

Safety, attention to detail and the comportment of the tower crew were among the factors leading KVTN in its selection of a contractor to build a replacement tower for its TV station broadcasting site in England, Arkansas.

38 **Cellcom Powers Sites That Are Off the Grid**

Jim Lienau

Using a combination of sources, wireless telecommunications carrier Cellcom ensures the delivery of twice the necessary power to its Ackley, Wisconsin, cell site under worst-case predicted solar and wind conditions.

44 **How to Use Scale Models of Tower Installations**

George Filmer

From marketing antenna space rental property to proving a case involving possible liability in accidents involving personal injury and fatalities, scale models of antenna sites can make the difference.



on the cover

Tower climbers must be prepared to work in adverse conditions, and OSHA regulations address work performed during inclement weather. A key safety provision is that climbers' fall-protection equipment must be attached to the tower 100 percent of the time. A related article appears on page 28. Photo: Safety One International, Sedalia, Colo.

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Departments

6 Publisher's Note

Change is here.

8 Editorial Comment

Exit: FCC Chairman Kevin J. Martin

10 PCIA Proactivities

Mike Saperstein

Election brings changes.

12 State Wireless Association Program

Nancy Chrisman

SWAP national sponsorship program.

16 State Wireless Association Spotlight

John Stevens

Arizona Wireless Association.

18 Construction

Beau Aero

Communications industry jobs increase despite economic downturn.

20 Law and Regulation

William Sill

FCC vows to develop new backup power rule.

22 Speaking Out

Peyton

Unionization would benefit tower techs and vendors.

24 National Association of Tower Erectors

Don Doty

It's up to you.

47 Safety Products and Services Showcase

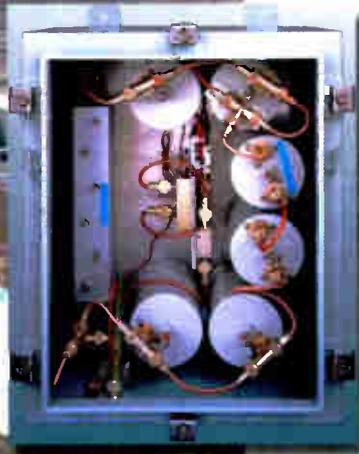
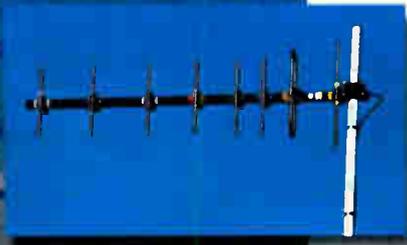
50 Advertisers Index

50 Professional Directory

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Change Is Here

Unfortunately, it may not all be for the better. So, Chairman Martin is now former Chairman Martin. The majority of people are happy about that, regardless of party. The new chairman-to-be, Julius Genachowski, is an entrepreneur with a long history in the venture capital market. It should be a much more interesting time. Hopefully, we'll see the FCC promote and allow for new opportunities.

As for the loss of 8,000 jobs at Sprint Nextel: *Holy cow*. That's not a good sign for



the industry; however, a lot of the company's network improvement and deployment plans appear to be on track. And the industry's new best buddy, Clearwire, is moving forward by all accounts. Heck, the folks at Open Range received funding and are now moving into

the harsh reality of executing, just as Clearwire is. The dog finally got the car. Now what? How do you eat this thing?

It does not affect us too directly, but the cancellation of the New York state 800 MHz project with M/A-COM Wireless is an interesting event. Other alternative users of sites are also doing pretty well, moving toward eventual deployment. Although the 700 MHz folks are going to have to wait a few more months to get their hands on the spectrum currently used by the analog and digital TV stations, it will happen, and that will be good for all of us.

In late January, I was lucky enough to attend a presentation about TV white spaces by Robert Weller, chief of the Technical Analysis Branch at the FCC's Office of Engineering and Technology. It looks as though there will be a pretty large number of unlicensed, but "registered," base stations out there, all looking for homes. The relevant FCC rules have not yet been completed, but the way the rules

are shaping up makes it possible to see how things are likely to play out. I think it will be good.

Of all the things I have written about on this page, the most response I have ever received involved my question last month about what an air terminal is. The number of responses is impressive. The only problem is, I thought I knew the right answer, but with the variety of convincing replies I've been receiving, I'm not sure I'm right anymore. I'll do the research and get something in here next month.

Everyone around D.C. is trying to figure out how the economic stimulus package is going to help us in the telecommunications industry. Already it is clear that it will contain substantial provisions for rural broadband. I really have no idea at this time how it is going to shake out, but I can tell you it is going to be fun. Right now, everyone seems to agree that billions of dollars will be handed out. No one is sure who should administer it or how. It will be history by the time you read this, but it will have an impact on 2009 for the industry.

Because the digital TV transition eventually will result in a number of changes to low-power TV stations and TV translators, it is likely that the overall number of digital TV facilities will need to increase slightly, and it is also likely that changes will be made to a number of the existing deployments. Don't expect too much overall growth, but do expect a flurry of activity in 2009.

I hate to complain about "us" too much; however, I've been working on a small public safety project lately, and I have had reason to place calls to two of the larger tower companies. After an operator gave me the correct contact person, I left the polite "Hi, I'm interested in tower number ... and my phone number is" You know what happened next, right? Yep, nothing. At this writing, I have been waiting for a week for a reply, and I will try again. I'll let you know how my experience plays out, such as, how many times I have to call and how long it takes before someone calls me back. I'm not expecting to report great results. **agl**

by Rich Biby, Publisher
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World Radio History

Exit: FCC Chairman Kevin J. Martin

Perhaps it is an advantage that businesses that own telecommunications towers and manage rooftop antenna sites and that do not have FCC licenses are relatively free from FCC regulation



compared with businesses that have FCC licenses. Those that are in the wireless infrastructure business without also having wireless carrier or broadcasting licenses come under FCC regulation for aviation

obstruction marking and lighting and for antenna structure registration, but perhaps not much else.

Wireless infrastructure companies have the carriers and broadcasters as customers for antenna, base transceiver stations and backup power equipment rental space; thus, FCC actions and inactions affect them, although indirectly. So it is that a drama played out between the former FCC chairman, Kevin J. Martin, and two U.S. congressmen, John D. Dingell (D-Mich.) and Bart Stupak (D-Mich.), swerves into view just as a change in administration brings contradictory reports followed by departures and reassignments among the players.

Former Chairman Martin came under fire on Dec. 9, 2008, with the issuance of "Deception and Distrust: The Federal Communications Commission Under Chairman Kevin J. Martin," a majority staff report prepared for the use of the Committee on Energy and Commerce of the U.S. House of Representatives. Dingell was chairman of the Committee at the time — Rep. Henry Waxman (D-Calif.) is now the chairman — and Stupak

is chairman of the Subcommittee on Oversight and Investigations. Martin, who resigned from the FCC on January 20, became a commissioner on July 3, 2001 and was designated as chairman on March 18, 2005.

"Our investigation confirmed a number of troubling allegations raised by individuals in and outside the FCC," Stupak said. "The Committee staff report details some of the most egregious abuses of power, suppression of information and manipulation of data under Chairman Martin's leadership. It is my hope that this report will serve as a road map for a fair, open and efficient FCC under new leadership in the next administration."

"Any of these findings, individually, are cause for concern," said Dingell. "Together, the findings suggest that, in recent years, the FCC has operated in a dysfunctional manner and Commission business has suffered as a result. It is my hope that the new FCC chairman will find this report instructive and that it will prove useful in helping the Commission avoid making the same mistakes."

The Committee described its report as the culmination of a bipartisan investigation into the FCC's regulatory processes and management practices that was formally launched on January 8, 2008.

The investigation found that former Chairman Martin manipulated, withheld or suppressed data, reports and information. The report alleges that important Commission matters have not been handled in an open and transparent manner, thereby raising suspicions both inside and outside the Commission that some parties and issues are not being treated fairly. "Chairman Martin's heavy-handed, opaque and noncollegial management style has created distrust, suspicion and turmoil among the five current commissioners," the report reads. The report also criticizes Martin for not efficiently managing Commission staff and for failing to carry out some

important FCC responsibilities.

On January 15, days before Martin resigned, the FCC released its own report, "Moving Forward: Driving Investment and Innovation While Protecting Consumers."

"Under Chairman Martin's leadership, the Commission has produced meaningful results for consumers," the FCC report reads. "It put in place the appropriate regulatory framework that achieves the twin goals of spurring investment and establishing open platforms to deliver choice and innovation to consumers. In almost all cases vigorous competition has enabled consumers to get newer and more innovative technologies and communications services at ever-declining prices. Television programs are sold on the Internet and streamed wirelessly to mobile devices; teenagers communicate over IM, SMS and MySpace, not the landline phone; DVRs mean you watch your TV when and where you want; mobile phones show movies, play songs, photograph your kids, and even send you emergency messages. The Commission's efforts in recent years have helped all Americans reap the rewards of convergence and the broadband revolution."

The two reports are available to download at the Committee and FCC websites. Together, they're about 200 pages — your tax dollars at work.

Although the majority staff of the Committee and Subcommittee kicked Martin as he went out the door, Commissioner Michael J. Copps said in response to Martin's resignation, "Sometimes Kevin confounded Commission-watchers by putting forward very original ideas that those who didn't know him might never have expected. This made some folks happy, some unhappy and others occasionally frantic. But it could also be refreshing."

On one thing, perhaps everyone involved could agree: It was time for a change. **agl**

By Don Bishop, Exec. Editor
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Election Brings Changes

— by Mike Saperstein —

As we move into February, we begin to see the results of the nation's November decisions. The elections have brought political changes on the federal, state and local levels that could have an effect on wireless infrastructure siting regulation. At PCIA, we have been actively monitoring the shifts in the political landscape and working to meet the resultant advocacy and educational challenges.

Governance changes

On the national level, President

Obama's win is bringing several changes to the structure of federal communications governance, including the appointment of a national technology czar. As of press time, this newly created position had yet to be filled



and its full overlap with the Federal Communications Commission is still unknown, though the technology czar will apparently be charged with developing a national, interoperable wireless network for first responders, among other duties.

New FCC chairman

The election of a Democrat to the Oval Office also signals a change of balance at the FCC. As is the custom, the FCC will receive a new chairman chosen by the president, and the Commission will now have a Democratic majority. Though many wireless infrastructure siting issues are bipartisan, this change could have an effect on some relevant pending matters before the FCC, namely how it proceeds in implementing the U.S. Court of Appeals for the D.C.

Circuit's February 2008 order with respect to migratory birds and tower registrations. Commissioner Michael Copps, a Democrat who may assume the role of interim chairman and who will at least gain more influence, is on record as saying, "As we move forward with the steps that the court has ordered us to take, I hope we will live up to the letter *and the spirit* of the environmental statutes Congress has given us. This means more than just checking the boxes required by the statutes — it means taking a thorough look at whether our rules and practices contribute to millions of needless bird deaths."

Rapid infrastructure deployment

PCIA will continue to work with the FCC for a balanced implementation of the court order that recognizes the importance of the rapid deployment of wireless infrastructure.

PCIA has also begun taking its advocacy message to Capitol Hill in an effort to educate lawmakers on the direct effect wireless infrastructure plays in allowing the nation to reap the benefits of wireless advanced services. The congressional members targeted hail from across the nation and either serve in influential telecom policy positions or are from districts in which infrastructure siting is particularly difficult. The response so far has been overwhelmingly positive, with many expressing their surprise at the difficulties of wireless infrastructure siting and noting the important role it plays in America's economic and public safety future.

PCIA continues its long-standing involvement with national policy-maker groups to encourage reform of local wireless siting policies. In late 2008, PCIA participated at the National League of Cities annual conference, where we discussed zoning

regulations with various city council and county board members from across the country. We look forward to our activities at the annual American Planning Association conference in late April. At the conference, we will interface with planners to illustrate how to conduct a rational review of wireless facilities proposals according to land-use principles. This approach contrasts with the quasi-network-engineering review often suggested by some municipal consultants. The application of land-use principles appropriately balances local concerns with the public's need for ubiquitous wireless coverage.

State outreach

Similarly, some of the state wireless associations in our State Wireless Association Program have embarked upon their own outreach efforts with policy-maker groups. In recent months, the California, Florida and New York Wireless Associations participated at statewide forums for local government officials. These efforts provide valuable resources to decision makers, and we applaud the efforts of state wireless associations to put a public face on wireless infrastructure with important constituencies.

Stay tuned to this column as these efforts continue. Please contact us for more information or to find out how you can become involved.

Mike Saperstein is a public policy analyst with PCIA — The Wireless Infrastructure Association. His email address is michael.saperstein@pcia.com.



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SWAP National Sponsorship Program

By Nancy Chrisman

Ah, the New Year — it never fails to invite reflection on the past and a focus on the future.

As I replay the memories of SWAP 2008 — the people, the amount of work, the impact, and the charities — I am filled with a deep sense of pride and humility. The SWAP 2008 story is one of great dedication, community and hope.



As with most great stories, SWAP 2008 is a story of great people. Together, all

the state wireless associations make up a complex and diverse group, drawn from every segment of the wireless industry. More than 200 leaders and many of the thousands of members of state wireless associations worked tirelessly throughout the year to advance our industry through a host of enriching and exciting activities.

This past year saw an increased emphasis on education, resulting in a substantive curriculum with topics ranging from tower safety and copper theft to Rev G and raising capital. Rounding out the syllabus was a series of carrier panel discussions, regulatory roundtables and lunchtime learning events — something for everyone. Also, there was no

shortage of opportunities to network. Indeed, the attendee lists of the New York State Wireless trade show and of the Alabama, Georgia and Tennessee 3rd Annual Tri-state meeting read like the *Who's Who* of wireless. The state associations in the metro Washington, D.C., area made rubbing elbows with industry luminaries particularly easy. The Virginia Wireless Association featured Morgan O'Brien, founder of Nextel Communications and Cyren Call, as the keynote speaker during the association's launch, and former FCC Chair Reed Hundt delivered the keynote for the Maryland/DC Wireless Association's fall event.

The state wireless association advocacy efforts in 2008 were truly impressive. While the Alabama Wireless Association was promoting pro-siting legislation, the Tennessee

participated in hearings in Washington state on the efficacy of current legislation, and both of the state wireless associations in Pennsylvania and New York conducted "Wireless 101" sessions with policy makers in those states. The Maryland/DC association worked with policy makers to ensure an understanding of the inextricable relationship between robust, sophisticated wireless services and economic development for a region that is actively competing for foreign investment. Many individual and dual-state associations, such as Missouri/Kansas, Florida, Georgia, New Jersey, Ohio, and Louisiana/Mississippi, have been highly active on the local front, participating in ordinance revisions and intervening in egregious zoning cases. Litigation was also part of the 2008 SWAP advocacy agenda, with

the California Wireless Association filing in a landmark federal court case.

Many state wireless associations sponsor golf tournaments and other activities to bring members together in social and recreational settings and to generate surplus

funds to donate to worthy causes. As an important part of their connection with their communities and their own members, state wireless associations raise funds to help charities and the families of association members stricken by tragedy. State wireless association members have



Wireless Association was defeating burdensome legislation, and the Carolinas Wireless Association was working to bring zoning ordinances in line with newly enacted legislation in North Carolina. Meanwhile, the Northwest Wireless Association

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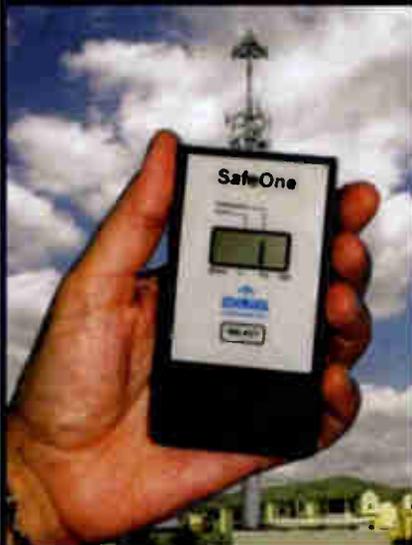
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collectively raised more than \$300,000 to support local charities committed to stamping out insidious diseases, supporting American armed services veterans, and helping our country's most vulnerable citizens and children in need. In addition to these extraordinary contributions, state associations have banded together to honor and support members of our own "wireless family." The Illinois Wireless Association raised more than \$60,000 for the children of Mark Turkula of US Cellular. Turkula, a 12-year industry veteran, was killed in an accident last February. The Northwest Wireless Association hosted a barbeque fundraiser to establish the Jeremy Combs Memorial Fund. Combs, an 11-year industry veteran, died tragically in a project-related accident last September. Both the ILWA and NWWA received generous support from members of other state wireless associations around the country.

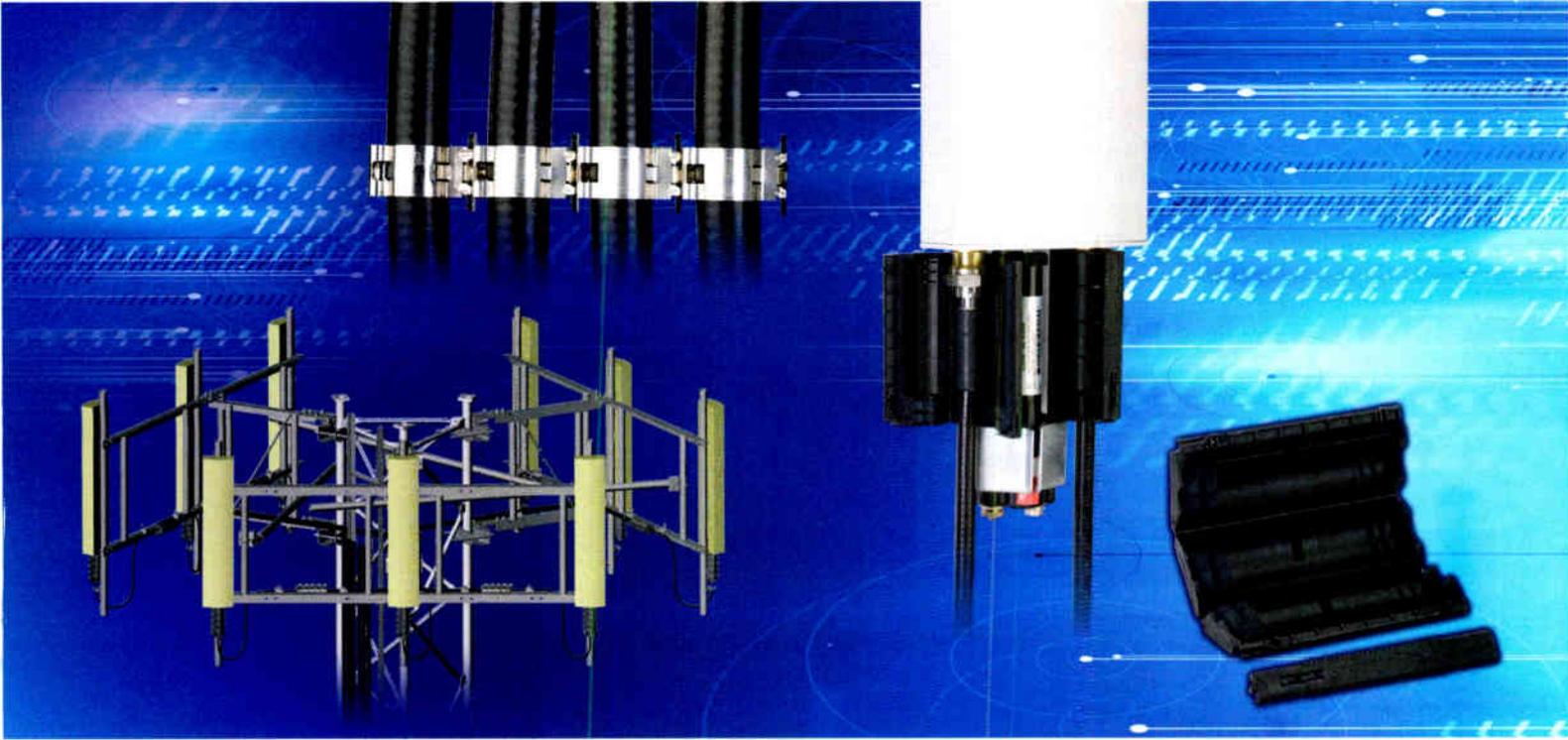
Six associations coming

SWAP 2009 is already unfolding to be another great story. Six associations are in formative stages, with two scheduled to launch in the first quarter. The New York State Wireless Association is well into planning its 2009 trade show, and several associations are pairing up for joint events. Inspired by advocacy successes in 2008, regulatory committees across the country are working with carrier members to set the course for 2009. PCIA will continue to provide a forum for these associations to work with its national peers and lend our support, resources and tools to help them achieve their 2009 objectives.

As the director of the State Wireless Association Program, I am honored to have shared in the work of the state wireless associations and look forward to rolling up my sleeves to help achieve even more great outcomes in 2009. If you have a passion for wireless and would like more information on SWAP, I invite you to contact me. **agl**

Nancy Chrisman is director of membership and SWAP at PCIA — The Wireless Infrastructure Association. Email: nancy.chrisman@pcia.com.

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Arizona Wireless Association

By John Stevens

The Arizona Wireless Association (AZWA) was founded in 2006 with a mission to cultivate relationships within the wireless industry and create a unified voice that supports the development of quality wireless networks, the enhancement of the communities we serve, and a spirit of charitable giving. AZWA has been well received by the wireless community in Arizona and surrounding states and is comprised of a well-diversified group of companies and individuals representing all facets of the industry.



Since its inception, AZWA has provided numerous educational and networking forums for its members and the community. Examples include a lunch event where a panel made up of several carrier representatives, a PCIA representative

and the AZWA Regulatory Committee chairman discussed local and national legislative issues affecting cell siting, political issues that affect the wireless industry, and the legislative process. The AZWA Knowledge & Networking event included in-depth discussion on how current financial issues affecting the country translate to the wireless industry.

The AZWA Regulatory Committee, chaired by Ginnie Ann Sumner, has been involved in numerous regulatory issues affecting the wireless community and wireless services in Arizona. AZWA has been helping to craft the Phoenix Text Amended for Wireless Communications Facilities. The Text Amendment will help to organize and consolidate the current wireless ordinance and redefine collocation, stealth and siting parameters. On Aug. 13, 2008 the Planning Commission voted to initiate the Wireless



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2009 Events
 Feb. 6 – Second Annual Golf Tournament
 Our 2009 event schedule is not set We will typically have one event per quarter.

Website: www.azwa.org

Photography courtesy of Camouflage

Text Amendment. Next steps include the Text Amendment being presented to each of the 15 village planning committees, then the planning commission, and to the city council for final approval. AZWA has also provided educational seminars for several municipalities explaining the wireless development process to planners and city officials.

In addition to its educational programs, AZWA is committed to reaching out and giving back to the community in a charitable fashion. Through AZWA events and volunteer work, the association has donated to a school for homeless children to help

them build a library, given a monetary donation to the Boys & Girls Club to advance its programs, provided food to local food banks, supported cancer walk participants, and purchased 4,000 bottles of water for the Salvation Army water drive. AZWA continues to team with sponsors and like-minded organizations to positively affect the community.

The wireless industry landscape in Arizona is vibrant and continues to evolve. AZWA will continue to play an integral role in the future dynamics of wireless in Arizona by providing a venue in which to learn, connect, and be a part of enriching our communities. **agl**



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Comm Industry Jobs Increase Despite Economic Downturn

By Beau Aero

Four billion cell phones are currently in operation, representing almost two-thirds of the planet's population.

This astronomical number not only means large revenue for cell phone companies, but also a bright outlook in the telecommunications industry.

My employer, a global tower solutions provider, has noticed a growth in the company and the booming telecommunications industry.

Over the next five years, 250,000 additional towers will be required in the United States just to keep up with existing demand, according to a speaker at the CTIA Wireless convention. CTIA is a trade association that represents sectors of wireless communications including cellular, personal communications services, and enhanced, specialized mobile radio.

Survey Says

A recent survey by Towers Perrin found that some \$60 billion earmarked for infrastructure spending over 10 years would demand civil engineers to plan cities and towns, and construction workers to build roads and bridges. And a push to supply broadband to every community could create thousands of telecom jobs. Towers Perrin is a professional services firm that helps organizations improve performance through people management, risk management and financial management.



According to a report from ABI Research, by 2011, the global market for mobile devices will exceed \$250 billion, mobile marketing and advertising will hit \$19 billion, and the mobile music

market is expected to ring up \$11 billion in annual revenues. ABI Research assists manufacturers of wireless semiconductor



components in understanding and entering new markets.

Trade press reports say that wireless technology has become the key enabler of a mobile world, which, in turn, is changing the way people live and work, and how organizations operate. It's transforming everything from interpersonal communications and medical care to military operations and public safety.

"Many large companies are feeling the turmoil and laying off large percentages of employees. Look at the auto industry, for example," said Sarah Gallagher, economic development director for the city of Boonville, Mo. "People will drive the

lower-priced cars, scrimp on brand-name items, get fewer cable channels or even ditch their landline, but they will not give up their cell phones."

My company's human resources manager, Katie Grissum, told me that our own company is growing at a fast pace. "Our growth and development in the tower manufacturing industry has continued to skyrocket," she said. "The fast growth has us continually looking for highly qualified, hardworking employees who will help our company keep up with the fast-growing industry trends."

Current research shows that more Americans are ditching traditional landlines in favor of cell phone services, according to the results of a federal survey released on Dec. 17, 2008. More than one in six American households, or 17.5 percent, depended solely on cell phones for their telephone communications during 2008, up from 13.6 percent a full year earlier, according to survey results released by the Centers for Disease Control and Prevention. And 13.3 percent of American households were reported to receive all or almost all of their calls on cell phones despite having a landline telephone in their home.

Cell phones are one product that consumers will not give up when cutting back for 2009. With our current economic difficulties, consumers might not buy the newest phones on the shelf, but they will keep their cell phone service agreements. And for the thousands of Americans looking for jobs, it seems the place to look might be the telecommunications industry. **agl**

Beau Aero is senior project manager for GlenMartin, a global tower solutions provider based in Boonville, Mo.



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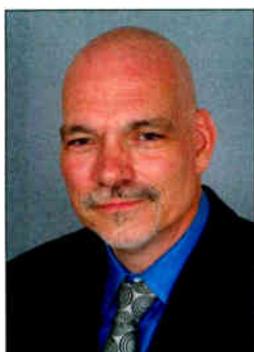
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FCC Vows to Develop New Backup Power Rule

By William Sill



On Dec. 3, 2008, the FCC asked the U.S. Court of Appeals for the District of Columbia Circuit to dismiss the appeal of FCC orders that adopted and modified a backup power rule and informed the Court that the FCC would issue a new rulemaking proceeding aimed at developing revised rules. This latest development begins yet another chapter for the FCC's much beleaguered backup power requirements adopted in 2007 in the

wake of Hurricane Katrina.

The rule and the storm it created

The FCC's Backup Power Rule imposed significant burdens on nationwide commercial mobile radio service providers with more than 500,000 subscribers and large local exchange carriers by requiring them, in most instances, to provide backup power to facilities necessary to maintain communications for either an 8- or 24-hour period (see *AGL Report*, "Backup

considered to be a diktat that failed to prioritize the provision of backup power between those sites that are critical to maintaining service and those that are not. There were also concerns about many sites lacking the space necessary to accommodate batteries, generators or fuel storage tanks to comply with the rule. Many believed that the FCC had significantly underestimated the amount of time, money and manpower required to comply with the backup power mandates and the reporting requirements. In November 2007, a petition to review the FCC orders adopting the rule was filed with the D.C. Circuit, and PCIA, including the DAS Forum, intervened in support of the petition.

Following oral arguments before a highly critical panel of judges, in July 2008, the Court held the case in abeyance while the FCC sought approval for the reporting requirements associated with the rule from the White House Office of Management and Budget. Two months later, the FCC submitted the information collection to OMB for review pursuant to the Paperwork Reduction Act. The FCC told OMB that the initial inventory report would take a

carrier about 96 hours to prepare at a cost of about \$2,800; the second report would take an estimated 192 hours to prepare, costing almost

\$5,540. In contrast, Sprint Nextel estimated that just the first report would take thousands of hours to complete and cost upward of \$100 million.

PCIA and the DAS Forum, along with carriers and associations, jointly filed comments urging OMB to disapprove

the proposed collection, stating that the FCC had greatly underestimated the burden on carriers to gather the necessary information for the report, and the information would be so voluminous as to be effectively useless to the Commission given the staff allocated to reviewing the information.

'Hurricane OMB' hits the FCC

While OMB rarely rejects an agency's proposed information collection, on Nov. 28, 2008, it disapproved the FCC's backup power reporting requirements. OMB found that not only had the FCC run afoul of procedural requirements by not seeking and evaluating public comments before adopting the reporting obligations, but also the Commission had failed to (1) demonstrate the practical utility of the collected information; (2) make a reasonable effort to reduce the reporting burden on respondents; and (3) allocate sufficient agency resources "for the efficient and effective management and use of the information collected." The OMB's tersely worded and thorough disapproval — combined with the fact that the FCC conditioned the effectiveness of the rule as a whole on OMB approval — effectively stopped the entire Backup Power Rule from becoming effective, not just the reporting mandates.

Damage assessment and rebuilding

Although independent regulatory agencies such as the FCC have the authority to override OMB's disapproval, the FCC notified the Court in its December 2008 letter that it will not exercise the override authority. The FCC has instead decided to initiate a

Carriers were troubled by what they considered to be a diktat that failed to prioritize the provision of backup power between those sites that are critical to maintaining service and those that are not.

Power: Federal Mandates and Industry Trends," August/September 2008, page 14). In addition, the Backup Power Rule required these carriers to compile and submit detailed and comprehensive new inventory compliance reports.

Carriers were troubled by what they

new rulemaking proceeding “with the goal of adopting revised backup power rules that will ensure that reliable communications are available to public safety during, and in the aftermath of, natural disasters and other catastrophic events while at the same time attempting to address concerns that were raised regarding the prior rules.” The quotation is from a letter from Nandan M. Joshi, Counsel, FCC, to Mark Langer, Clerk, D.C. Circuit, dated Dec. 3, 2008. The petitioners have agreed the case should be dismissed, but have also requested that the underlying orders be vacated. The Court has yet to act on the requests as of the time this article goes to press but is expected to dismiss the case.

In light of the depth and breadth of the OMB’s disapproval, the FCC had little choice but to “go back to the drawing board.” The FCC’s decision to institute a rulemaking proceeding provides both uncertainty and opportunities for the industry. It is not clear whether the FCC will have the desire to start the rulemaking process until the new administration and new Commissioners are in place. While the Backup Power Rule enjoyed bipartisan support among the FCC’s Commissioners with Commissioner Copps taking a particular interest in this mandate, it is unclear how a reconstituted 8th floor will view the issue. Further clouding our crystal ball is the Dec. 12, 2008 letter jointly sent by Sen. Jay Rockefeller (D-W.Va.) and Rep. Henry Waxman (D-Calif.) in which they “strongly urge [Chairman Martin] to concentrate the Commission’s attention and resources only on matters that require action under the law and efforts to smooth the transition to digital television” until the new administration is put in place.

The flipside of the coin is that the initiation of a new rulemaking proceeding provides the industry with a fresh opportunity to advocate a set of rules that affords carriers and tower owners the flexibility necessary to develop backup power responses that best meet the goal of providing uninterrupted communications during emergencies. The industry should be energized by the lessons learned from

the first Backup Power Rule — that a “one-size-fits-all” solution would saddle the industry with onerous requirements and impossible tasks. Fortunately, the industry’s advocacy efforts may now, after the OMB’s rebuff and a strong, industry-mounted judicial challenge, fall on more receptive ears at the FCC. The core message that the industry needs to impart is that the new rules should recognize, and take advantage

of, the expertise that licensees and tower owners have in designing their facilities and restoring them when emergencies arise. **agl**

William Sill is a partner in the law firm of Wilkinson Barker Knauer. He chairs the firm’s Tower Group, and his email address is wsill@wbklaw.com. Another attorney with the firm, Billy Layton, contributed to the article.

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Unionization Would Benefit Tower Techs and Vendors

By Peyton

I take exception to “NBC’s *Dateline Presents Highlights Tower Climbers*” [*AGL* October 2008], an article I find to be offensive and inaccurate.

Contrary to the opinion stated by the unnamed veteran tower worker who said, “The program neglected to reflect the \$600 to \$700 per week tax-free that a man in the field is getting per diem,” carrier and vertical real estate owners lean toward the local bidder that does not have per diem expenses. The competitive bid from out of state has to consider the local bidder to win the bid. Per diem becomes the burden of the vendor as an out-of-pocket expense.

The worker quoted in the article went

on to say, “It is not unusual for a tower hand with one year of experience to make upward of \$70,000 per year.” In 28 years of service, I have never logged with the IRS a profit figure like that. In 1997, with two trucks and a six-man team, my gross income filed with the IRS was \$491,000, yet I did not profit \$70,000 as a salary. What an inconsistency from my personal experience.

\$14 per hour

In the TV program, tower worker Ernie Hart said on camera that he earned \$14 per hour. An entry-level worker will come on the team for \$10 to \$12 per hour. A good worker with one year of experience can expect \$14 to \$16 per hour. In 1997, I paid team leaders \$17.50 per hour. Prior to 2001, I bought their meal receipts up to \$25 per day and I paid for their lodging. A large change in the industry started

in 2000 with carriers and vertical real estate owners — they reduced the value of service contracts they would accept by two-thirds, and immediate out-of-pocket overhead costs rose.

Vendors to which I refer in the following information are companies that employ tower workers. I prefer the term “tower techs.” Vendors provide construction and maintenance services to the carriers and vertical real estate owners. The point of contention I wish to shed a light on is what the tower tech actually is paid and what causes the low wages for the “most dangerous job in the nation.”

Whether a company is a higher-quality “tower tech” vendor or a lower-quality “tower dog” vendor makes no difference when it comes time for the vendor to qualify for work. Both kinds of vendors qualify with the same paper forms and have a carrier or vertical real



What Is the Iron Workers Union?

The International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers Union, AFL-CIO, is a trade union whose roots go back to the 1890s. The union’s membership stands at about 140,000, with 15,000 apprentices. Members have worked on nearly



every major construction project you can think of — the Golden Gate Bridge, the Sears Tower, the St. Louis Arch, the Oil Sands Plant Expansion in Alberta, the World Trade Center and the World Trade Center recovery effort, to name a few.

Some people confuse ironworkers with steelworkers. Ironworkers are members of the building and construction trades. Ironworkers work on outside projects erecting buildings and bridges and

other related work. Steelworkers work in steel mills, which produce the steel.

The union provides many benefits and support for its members. These benefits include the advantage of working under a collective bargaining agreement that brings bigger paychecks, better health and retirement benefits, more secure jobs and safe working conditions. According to the U.S. Bureau of Labor Statistics, ironworkers earn well above the average income for the construction trades.

What a worker will actually earn depends on the collective bargaining agreement of the local union, but as of April 2001, earnings for journeyman ironworkers who performed outdoor work (including fringe benefits) ranged between \$19.15 and \$65.23 per hour. The average hourly wage for a beginning ironworker apprentice (not including fringe benefits) was \$13.03, and in some areas was as much as \$19.77.

Source: *Iron Workers Union website.*

estate owner sponsor for the states in which they choose to work. They have the same insurance overhead verified by the qualifying agents for the carriers and the vertical real estate owners. All vendors sign agreements that, through the years, have become legal labyrinths that usually include a lien waiver that limits the vendors' ability to collect money owed in case of a late payment, nonpayment or financial problems incurred by the carriers and vertical real estate owners associated with the occasional leveraged buyouts of the wireless networks and vertical real estate owners.

Vendor responsibility

It is the *vendor's* responsibility to raise the bid quote with the carriers and vertical real estate owners. It is the *vendor's* responsibility to set industry standards for pricing. It is the *vendor's* responsibility to have enough business conscience to share the profitability of properly maintained equipment, safety and in-service training, benefits, wages and a cash reserve that can facilitate the work.

All vendors are subject to *extreme* financial abuse at the hands of the carriers and vertical real estate owners. It is common practice among carriers and vertical real estate owners *not* to honor payment terms of net 30 days. "Net 30 days" means that by the end of 30 days, the payment should be in the hand of the contractor.

Factoring accounts receivable

Here's the problem these late payments cause the vendors and their employees. Slow payment or nonpayment prevents vendors, both master contractors and subcontractors, from building up a cash reserve. Lacking a cash reserve, many vendors have little alternative but to factor their accounts receivable at a discount of 18 percent with companies such as Facticeon, based in Atlanta. The discount involved with factoring consumes what little profit is left in already low bids. Thus, the late-payment and nonpayment situation is what continues to drive down the profitability of the vendors and the wages of the tower workers.

The carriers and vertical real estate owners are not likely to change their agreement forms and payment practices, yet until they do, vendors are sorely limited in their options for improving the wages of tower workers and the profitability of their own companies. The many similarities between the plight of the autoworker of the 1940s and the tower workers of today reveal the answer: Unionize the vendor companies by unionizing

the tower techs. For information about joining the Iron Workers Union, contact your local union. To find a local union near you, visit www.ironworkers.org/directory/LocalUnions.aspx.

Peyton, who goes by the single name, is the owner of TIME Team, with offices in Las Vegas and in Hays, Kan. He has been in the tower construction and maintenance business for 25 years. His email address is peyton@timeteam.us.

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It's Up To You

Make a New Year's resolution to commit to safety.

by Don Doty

Each New Year provides an opportunity to make resolutions that will make this New Year better than the last. This year, the National Association of Tower Erectors (NATE) is encouraging wireless and broadcast carriers, tower owners and contractor companies to make a resolution to create a safer work environment.

In 2009, NATE will continue to collaborate with and educate wireless and broadcast carriers, tower owners and contractor companies and discuss how to reduce the number of tower industry accidents and save lives. Everyone in the industry, from tower workers to CEOs, is responsible for changing the industry's approach on safety, including those who develop the requests for proposals, set project deadlines and hire subcontractor companies.

Best intentions

Making a resolution to commit to safety involves more than just saying so. Best intentions require follow-through if they are to have a genuine effect on saving lives. Toward that goal, NATE is asking carriers and tower owners to work to implement changes in the way they currently approach the topic of safety. One of these changes is to consider the validity of the safety program being used by tower erection, service and maintenance companies.



Although many owners and carriers have developed safety programs of their own, they should also learn about the safety programs created and implemented

The following are recommended aspects of an established safety program:

Training

Require employees to be trained to the NATE Tower Climber Fall Protection Training Standard (NATE CTS)

Utilizing the experience of dozens of leaders in tower safety, NATE created the industry's first tower climber fall-protection training standard, known as the NATE CTS. The document outlines training required for safely ascending and descending towers. NATE CTS was also designed for implementation either in-house or through commercial trainers. Along with training to the NATE CTS, employers should also be able to demonstrate the experience levels of their crew chiefs who are assigned to fill the defined role of "competent person" on site.

Safety Meetings

Meet with crews daily to reiterate the importance of safety

To keep safety top-of-mind each day, the competent person on site for the tower service company should conduct employee safety meetings. During these meetings, employees need to discuss safety topics, review any safety concerns and talk about recent changes in safety procedures. Employees should be encouraged to ask questions and share knowledge of any potential safety hazards they find on the job. After the safety meetings, each crew should inspect their equipment and perform job-hazard analysis. Crews should review key safety practices (100 percent tie-off, RF awareness), identify site hazards (weather conditions, possibly faulty ladders) and discuss what to do in



case of an emergency (locate nearest hospital, outline roles). The meetings do not have to last long; five minutes can save a life.

Safety Audits

Conduct regular audits of equipment, employees and safety programs

To ensure that gear is kept safe, the competent person on site should perform *daily* equipment inspections. Any worn or damaged equipment or equipment that is not functioning properly should be removed from service immediately. Audits of employee safety practices, such as those required by the NATE/OSHA National Partnership, should also be conducted on a regular basis to ensure that employees are putting their training into practice.

Companies should also require random employee drug testing and *mandate* 100 percent fall protection at all times regardless of job height.

by the tower service companies that they are considering hiring. Doing so may provide a better look into a company's true commitment to safety. Has the tower service company taken the time to establish and implement necessary safety practices and procedures for its employees? The answer to this question may help owners and carriers make better choices about the qualifications of contractors who end up on their job sites.

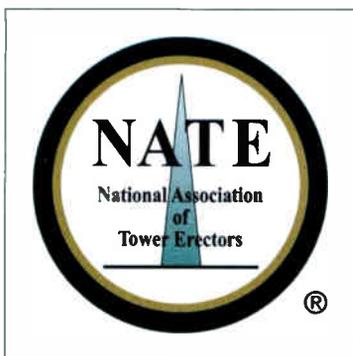
We are all in this together, so we all need to do what we can to make safety the only way of conducting

business. NATE will work hard this year to make safety a priority and push for setting reasonable project deadlines, hiring qualified subcontractor companies, and implementing and documenting a strong company safety program so that the industry will be safer for employees.

The beginning of a new year provides the industry with a chance to shine the spotlight on safety and set the tone for

months to follow. There is no better time than now to do your part and make sure tower workers come home safely at the end of every day. **agl**

Don Doty is chairman of Watertown, S.D.-based National Association of Tower Erectors, which he co-founded. He is vice president of Doty-Moore Tower Services, Cedar Hill, Texas.



About the National Association of Tower Erectors

The National Association of Tower Erectors (NATE) is a nonprofit trade association providing a unified voice for tower-erection, maintenance and service companies. As a member-driven association, NATE is directed by its board of directors and committees. Board members and committee members come from all types and sizes of companies located throughout the United States. Today, the association boasts more than 500 member companies in the United States, Bahamas, Canada, Cayman Islands, Mexico, Singapore and Sweden and continues to grow.

For additional information on NATE, please visit the website www.natehome.com.

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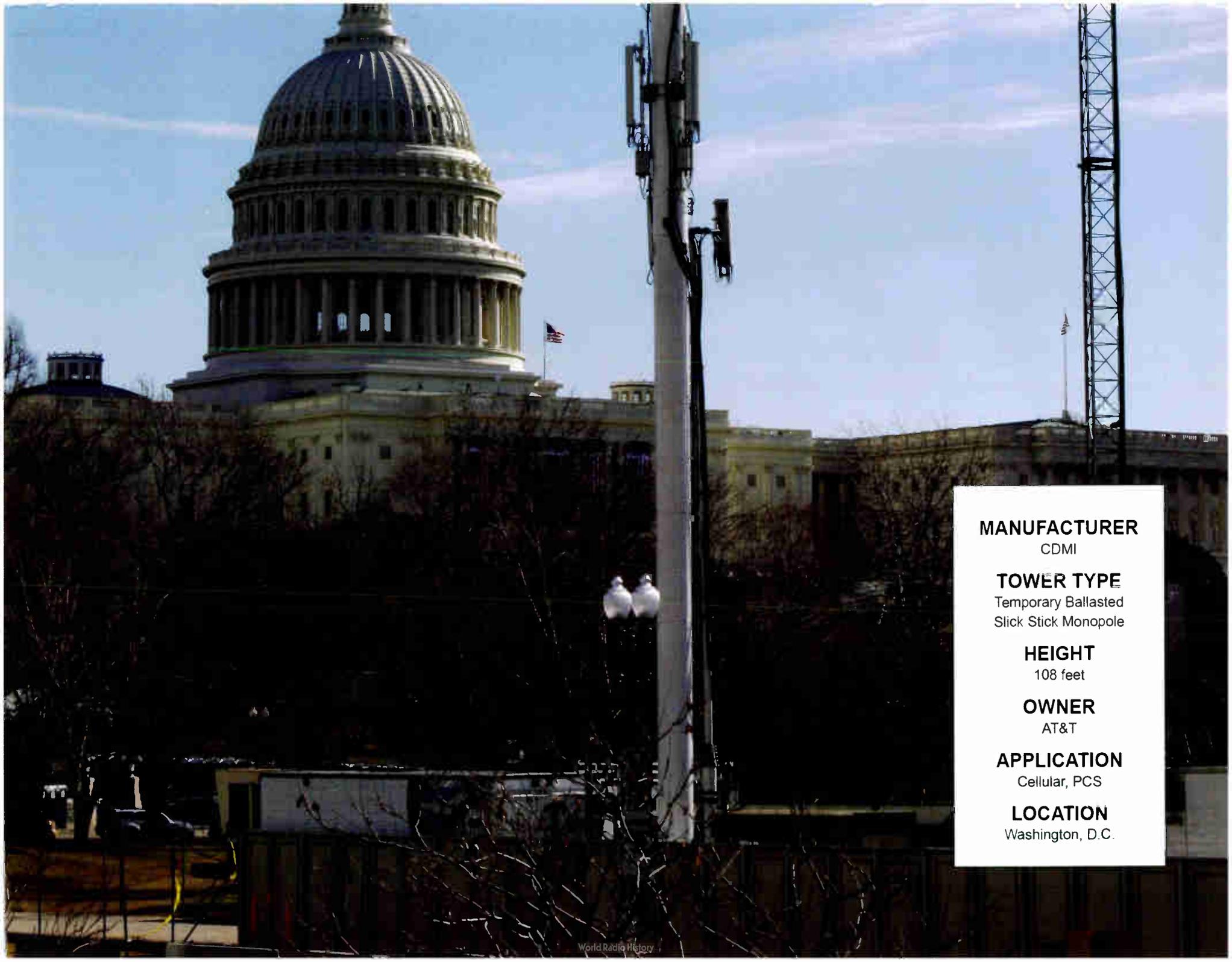


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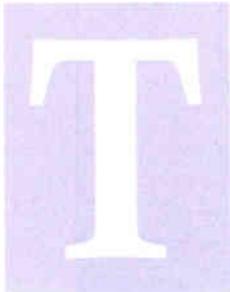
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OSHA Standards Promote Tower-worker Safety

How times have changed. Compared to the training, equipment and procedures of the 1980s, today's requirements involving tower climbing show the strides made toward eliminating injuries and fatalities.

By Alex Marcoux



The following is a fictional dramatization.

The pickup cab was jam-packed. Brad, who was driving, took the winding mountain road a bit too fast, and the truck nearly skidded off the dirt path. In his rearview mirror, Brad glimpsed three firefighters hanging on so they weren't thrown from the pickup bed.

"Slow down," the EMT beside him yelled.

"We're not going to help your uncle if we all get killed before we reach him," the other paramedic said.

For a split second, Brad caught sight of the fire engine and ambulance in his side mirror. The EMTs and firefighters had left their vehicles at the base of the mountain because neither truck would have made it up the mountain path.

"There." Brad pointed at the tower just visible over the horizon. With

the extra weight from the emergency workers, the truck's engine strained as it climbed the mountain's path. With every passing inch, more of the tower came into view, revealing a man suspended, motionless, near the top. It was Mike, a seasoned tower climber.

As the pickup reached the top of the hill near the base of the tower, Brad jammed on the brake and sprang from the vehicle. "Mike?" Brad screamed.

But the man dangling from the safety tether did not move.

The three firefighters who had been riding in the pickup bed unloaded their equipment and assessed the situation. Mike was suspended motionless nearly 180 feet above them.

"We got to get him down," Brad urged, glancing at his watch. "It's been almost *two hours*."

Bill, one of the volunteer firefighters, scratched his head. "I've never seen anything like this. I'm not sure how we're going to get him down." He fastened his helmet, grabbed a rope and, with no formal training but with 12 years in the volunteer fire department,

he started climbing the tower.

Brad couldn't believe this was happening. How could this have occurred? It was 1980. In this day and age, how could his uncle have gotten himself in such a precarious position — over a job?

Brad's mind raced as he watched the firefighter ascend the tower, slowly. Surely, he could have done something different? His mind traveled back just a few hours....

Brad, 24, was new to his job. He was thrilled that morning because he was working with his uncle, Mike, a 14-year veteran with the tower service company. Mike, 38, had been climbing towers for 10 years.

Today was Brad's first time at this tower site. It was a sunny, summer day. It was Mike's job to recalibrate an antenna; it was Brad's job to learn. Mike gathered his belt and strap, wrenches and Qwave calibrator. "It should take about 45 minutes," he said as he started his climb. "Just stay by the truck."

Brad watched as Mike ascended

Safety One instructor Wayne Wiggins (left) watches two students set up their fall-protection safety lanyards and positioning belts. At this point, the student in the role as a rescuer is evaluating the victim, played by the second student, for patient needs. The rescuer also is considering the options available for lowering the victim to the ground.



The scene above shows rigging for a rescue training session using a U.S. Department of Energy wind turbine. The rigging is used to conduct simulated rescues from the platform 128 feet high on the turbine. Safety One's Steve Fleming conducted the training for the Cherryvale Fire Protection District located south of Boulder, Colo. The district is under contract with DOE to provide rescue service at the site.

the tower. Mike stopped near the top and started the calibration. About 25 minutes must have gone by, and Brad was looking in a toolbox when he heard a thump from high above. He looked up. It was then he noticed that his uncle was hanging motionless from his belt.

"Mike?" Brad yelled. Repeatedly, Brad called up to his uncle. But he didn't move.

Alarmed, Brad opened the equipment shelter, but there was no phone or radio. He rummaged through the equipment on the truck, and there was no rope. Brad went to the tower and, with no training, he climbed. Hands sweating beneath his gloves, heart pounding so hard that it hurt, he climbed to within inches of his uncle. With one hand gripped to the tower, he reached to wake Mike.

"Mike. Wake up. Mike?"

But Mike just hung limp, his breathing labored.

The moments that followed would eventually become a blur to Brad. He quickly descended the tower and, not knowing where the nearest emergency services or phone were, he raced his truck

down the mountain path. Once on the main road, he drove like a maniac. He waved at an approaching car to stop, but he must have scared the woman as she sped past. Brad pulled into a gas station where he used the phone to dial 9-1-1. Although he knew the name of the tower where his uncle was left dangling, the operator couldn't locate it on her map. She dispatched emergency services to meet Brad at the station.

To Brad, it felt as though he waited forever for the EMTs and the local volunteer fire engine to arrive. Then the vehicles raced toward the tower. But the fire truck and ambulance could not drive the mountainous path. The EMTs and firefighters quickly gathered some equipment, tossed it in the pickup bed, and Brad continued up the mountain path with the emergency workers.

"He's a code black."

That voice jarred Brad back to the present. He looked high above him where he saw the firefighter beside his uncle, who was still hanging limp.

"I repeat, code black. He's gone," came the voice, amplified from a nearby radio.

It took Brad a moment to realize that it was the firefighter's voice on the radio, broadcasting that his uncle was dead.

Another six hours later, Mike's body was removed from the tower. Because the firefighters had no formal vertical rope rescue training, a mountain rescue team was called to assist. An autopsy revealed that Mike suffered a non-life-threatening seizure similar to one he had suffered 14 years earlier. Mike probably would have survived if he had been rescued from the tower within 20 minutes of his collapse.

Brad had to go home that night and tell his mother that her youngest brother had died. He would always be haunted, wondering, "What could I have done differently?"

Now, let's transition from the dramatization to consider the current regulatory environment and steps to improve safety.

According to Steve Fleming, director of antenna and tower training at Safety One International, Sedalia, Colo., Brad's thoughts about what could be done



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A climber is clearing ice on a telecommunications tower on a mountaintop in Northern California. Ice is a big concern for every aspect of climbing. OSHA addresses requirements for climbing towers during inclement weather. The main concern is that the climber be attached to the tower 100 percent of the time.

differently would echo the thoughts of the Occupational Safety and Health Administration investigator who would eventually review Mike's case.

Since 1970, OSHA has monitored employers, advocating and requiring safety for climbers. OSHA requires that employers provide their climbers with personal protection equipment and job and hazard-awareness training.

OSHA reviews every case resulting in injury or death with the intention of determining what can be done to prevent such an accident from happening again. Fleming said, "This is why I say OSHA standards are *written in blood*." As lessons are learned from costly mistakes, mistakes that cost the lives of climbers, OSHA modifies the standards to prevent similar incidents.

OSHA standards have undergone many improvements since the early 1980s. In 1998, the standards changed, disallowing the use of body belts for fall protection. The difference led to some significant changes in fall protection equipment and training.

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According to the U.S. Department of Labor's Bureau of Statistics, tower climbers have "the most dangerous job in America." Fleming said that, on average, accidents on towers and cranes lead to 25 deaths per year. Close to 80 percent of the deaths at telecommunications towers during the period from 1992 to 2001 were attributed to falls.

Fleming said it is no surprise that serious accidents still occur, even with OSHA keeping watch. "Think about it. There's no room for error. All it takes is a minor slip, and the consequence is grave — pun intended. Good equipment, common sense and training can mean the difference between life and death."

This places a huge responsibility on the employers to ensure that their climbers have proper equipment and training. "Make sure your company's certifications and logs are current. If it's not written down — OSHA will conclude *it didn't happen.*"

OSHA standards specific to the telecommunication industry include 29CFR 1910.268 Telecommunications

for existing towers and 29CFR 1926 Construction Standards for erecting a new tower or adding to an existing tower. OSHA's General Duty Clause has been cited for improper methods used when workers ride the hoist line and for an employer failing to have rescue provisions. Fleming said that although Mike's story is fiction, it is an excellent scenario illustrating some of the modifications to OSHA standards since 1980. Some changes as they pertain to Mike's accident include:

- *Equipment required for each climber* — full body harness, fall-protection lanyard with shock absorber, positioning belt, helmet with chin strap, lifeline and rescue equipment, inspected, and available on site.

- *Site requirements and job briefing (work safety program meeting)* — site location by address and/or longitude/latitude identified, site hazard evaluation.

"Competent person" designated and job review.

"Elevated (high-angle) rescue" evaluation, which determines the

individual responsible in the event a rescue is required, with contact information. It also assesses the workers' training on the job and determines if proper rescue equipment is available.

Ground safety established.

Harnesses, lanyards, positioning belts and rescue equipment to be inspected and logged before use.

Ladder safety systems evaluated, inspected and logged.

First aid kit on site and inspected.

Identification of employees at the site with emergency contact numbers.

Emergency procedure on site and reviewed.

Emergency communication contact evaluated.

- *Employees to be CPR trained.*
- *Qualified climbers to be trained.*
- *Rescue procedures involving a simulated rescue to be conducted annually.*

agl

Alex Marcoux is a freelance writer, author and motivational speaker. She can be reached at www.AlexMarcoux.com.

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How KVTN Erected Its 1,200-foot Tower

Safety, attention to detail and the comportment of the tower crew were among the factors leading KVTN in its selection of a contractor to build a replacement tower for its TV station broadcasting site in England, Arkansas.

By Rolin Lintag, CSTE

KVTN, the Arkansas Christian Connection, began broadcasting this summer using a new ER1 1,200-foot tower. The changeover from a previous tower was part of KVTN's preparation for digital broadcasting set to begin no later than Feb. 17, 2009.

KVTN had used a 690-foot Rohn 90 tower since it began broadcasting in 1988. The Rohn 90 was a hollow-leg tower with guy wires modified in the late 1990s to accommodate the additional digital TV antenna used for simulcasting KVTN. Both the analog antenna and the antenna for DTV were side-mounted to produce the needed "bent-peanut" pattern to cover the Arkansas cities of Little Rock and Pine

Bluff from England, Ark. The site served as a landmark for crop dusters because the 690-foot tower was the highest structure in the area. Although it weathered many storms, the tower's integrity had to be considered in an evaluation of its possible continued service for a few more years. A decision was made last year to order a new tower to meet the deadline for the analog TV broadcasting sunset. A decision then had to be made regarding the height of the new tower; the choices were 690 feet, 800 feet or 1,200 feet.

Integrity matters

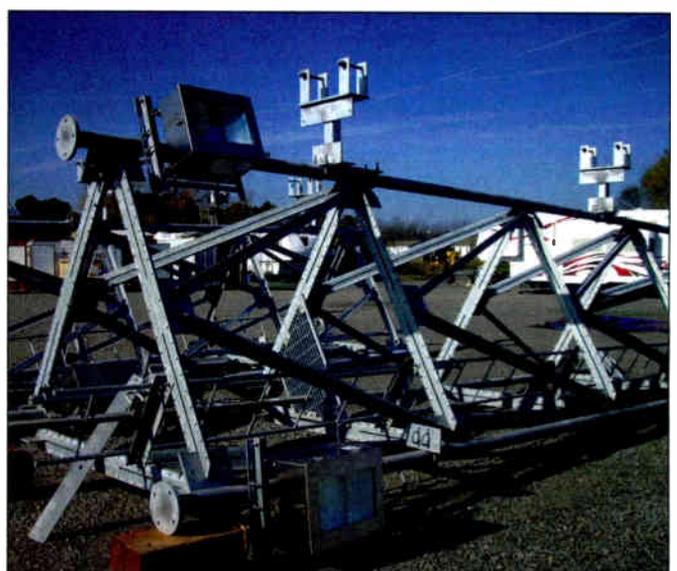
One especially important factor in deciding to replace the Rohn 90

tower was some uncertainty about its integrity because of its hollow-leg construction. Various tower companies were asked to provide quotes for an inspection to verify whether it would be safe to work on the 690-foot tower while another would be built beside it. The idea was to remain on the air on the old tower until operations were transferred to the new one. Another part of the quote was for labor to safely pull down the Rohn tower.

We contracted for some studies to determine whether the old tower could withstand having one or two guy wires cut in case of an accident while the new one was erected only



The construction crew finished the first few sections of tower called the stub. A crane erected the stub, and then the crew attached the first guying point.



The third of four tower light levels is shown here already installed prior to being hoisted up. It is good to have an opportunity to inspect them while the tower is on the ground, which is the last time non-climbers can photograph the flash heads.



With the use of a crane, the stub was lifted and positioned for placement on the tower base. This picture was taken from afar as a safety precaution.

40 feet away.

Another reason to replace the old Rohn tower was to prepare for compliance with the new EIA/TIA 422G standard. Although Arkansas may not yet require compliance with the standard, it is best to future-proof the station. We made sure that the tower companies we talked to were familiar with the new standard and its practical implementation.

How high should we go?

As to which tower height the station needed, two considerations came to the fore: *legal requirements* and *cost*. It seems certain that if and when concerns expressed by environmentalists regarding towers are translated into legislation or regulation, the result would not favor higher tower structures proposed for future construction. Avian deaths caused by high-rise structures such as towers may soon cause lawmakers or regulators to limit tower heights for new construction, over and above present Federal Aviation Administration regulations.

KVTN wanted the highest antenna allowed by law to ensure the best

possible DTV coverage. However, tower height dramatically affects cost, which doubles with an increase from 800 feet to 1,200 feet. It became clear that a compromise involving the construction of an 800-foot tower first and then adding 400 feet more at a later time would not save much in terms of capital expense. Although the price of \$1,080 per foot for a 1,200-foot tower is double that of the price for an 800-foot tower, propagation prediction models showed that the higher tower would deliver better coverage of fringe areas that KVTN never covered with its 690-foot tower. Our signal needs the height advantage to overcome obstructions such as Shinall Mountain. The additional CATV head ends the 1,200-foot tower would add to the viewership further justified the additional cost. It was decided that the 1,200-foot tower was the best way to go for the sake of the future of the station.

Service and dependability

We tried to compare the tower companies apples-to-apples as much as possible by being specific with the

request for quotation (RFQ). We sent questionnaires to obtain information on tower companies' safety practices and policies, crew qualifications and insurance policies. We also called references and verified customers' experiences with projects the tower companies previously handled. From the six initial tower companies we invited to respond, we narrowed our choice to three that we invited to meet with us.

Of the three, we chose ERI for the way it handles projects. From the many meetings, emails and telephone conferences we had, we observed the efficiency and qualifications of the staff in doing their homework and completing steps on time. Before the project was awarded to ERI, the teamwork we observed among the ERI staff gave us additional confidence that its employees' many years of combined experience would be orchestrated for favorable results with our project. The price differences between ERI and each of the other two companies was only a few thousand dollars, and we justified paying a little more to have confidence that our project would be taken care of well.

An important difference we perceived was how well ERI used implementation plans to figure out the project and to show how the company would safely construct the new tower beside the older one, and then pull down the older tower. Of great concern was how to minimize downtime of our broadcasting, a concern ERI understood well. We also liked the idea of using a tower crew that we could trust not to cause the station owner trouble with its community relations. Because KVTN broadcasts Christian programs, the station does

KVTN wanted the highest antenna allowed by law to ensure the best possible DTV coverage

not like tower crews drinking beer on site or getting involved in fights in a local bar. The owner, Agape Church, has had such experiences with tower



The first guying point was installed by climbers while the gin pole was being hoisted prior to removal of the crane. A close look may reveal climbers working on the gin pole attachment to the tower.

crews at its stations in the past. Tower King II proved to be the best crew I have worked with so far. They have a choice crew that starts early and ends late. The crew members were good neighbors while their mobile homes were on station property for several months. In fact, their presence on site saved the station some security service expenses. Security was important because valuable materials, such as copper lines, antennas and other parts, were delivered on site.

The quality of welds and joints are important to a tower so we made sure that weld inspections were performed.

KVTN had to reduce its transmitter power when the work approached the height of the antenna on the old 690-foot tower

The guy anchors of the present tower were also inspected using a new technique utilizing sonar waves. This method showed whether guy anchor rods had corroded to an extent that would pose a threat to the new tower project during the installation. Once

36 above ground level

the condition of the old tower was properly assessed, simulations were done to determine whether the old tower would fall if one anchor rod were to be damaged for any reason during the new installation work. When we were assured that all plans with regard to safety were adequate, the project was awarded to ERI, and the real work began.

Hard hats on

We designated areas for staging, identified tag lines within the property and filled the lines with SB-2 gravel material with matting underneath. The area is mostly farmland that can be flooded by water from drainage canals, depending on the time of the year. We had to make sure

that cargo trucks could come and go through the property as needed. The access road was widened and filled with SB-2 material. Temporary shelters were rented for storing tools and materials. Everything was ready after three days of landfill work.

Almost at the same time, boring tests were performed on the soil exactly where the tower base and guy anchors of the new tower were to be placed. Soil testing is necessary so the design is made with recent, accurate geophysical data. An F-250 truck became stuck in the mud, demonstrating the softness of the farmland soil. Our farmer friend came to the rescue with a large backhoe to extract the F-250 from the mud. It pays to be friendly with your neighbors.

After a week, the construction crew for the base and guy anchors arrived, and they finished their work in another two weeks. When the concrete anchors were fully cured, the tower crew arrived with their mobile homes, equipment and tower parts. The following days were spent mostly on inspections and assembly of the tower parts at the rate of one section per hour. The assembly included transmission lines and tower lighting with the sections still on the ground. I appreciated this step because it allowed me to photograph parts that would be difficult to see once the tower was stacked.

After a week of continuous assembly, the first six sections from the base, referred to as the "stub," were ready to be erected with a crane. The installation of the stub signified the start of bringing a tall structure into reality. In 13 days, the crew reached the 372-foot level before taking off for the Thanksgiving holiday. When they returned, tower work resumed without delay.

There was no major glitch in the project other than a day's worth of work being stopped because of inclement weather. Also, KVTN had to reduce its transmitter power when the work approached the height of the antenna on the old 690-foot tower. The station also had to go completely off the air for the safety of the crew when work reached the area directly in front of the antenna in use. The 1,200-foot tower was erected in two months, and became the new landmark in the area.

A new ERI slot antenna for DTV

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was installed on the new tower before KVTN could transfer its operation to the new facility. It took less than a day to move the operation over to the new tower. No problems related to the new transmission system occurred when power was applied. The same day, dismantling of the old 690-foot tower began. It took the six-man tower crew 15 days to lower the old structure to the ground.

The work was done with no compromise to safety and on schedule. After a few days of cleanup, the crew vacated the area and KVTN stands tall with its new 1,200-foot tower. We know that if we ever have another tower project, we would certainly want to work with ERI and Tower King II again.

agl

Romualdo "Rolin" Lintag, CSTE is chief RF engineer for VTN in Arkansas. His email address is rolin_lintag@yahoo.com.



The new tower at the left stands twice as tall as the old one on the right. This picture was taken just before the broadcast operation was transferred to the new tower. The work of dismantling the old tower was started the same day.

Cellcom Powers Sites That Are Off the Grid

Using a combination of sources, wireless telecommunications carrier Cellcom ensures the delivery of twice the necessary power to its Ackley, Wisconsin, cell site under worst-case predicted solar and wind conditions.

By Jim Lienau

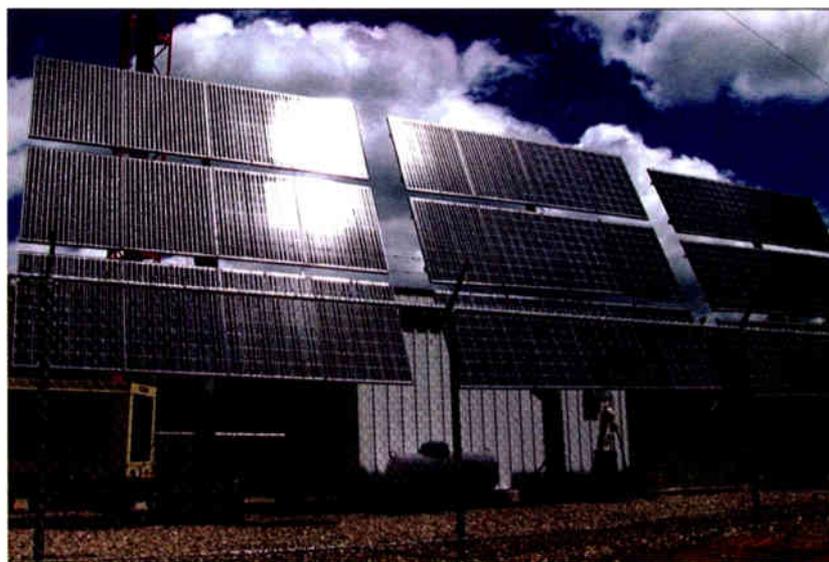
Cellcom appropriately chose Earth Day, April 22, 2008, to activate the first alternative-energy cell site in the upper Midwest. Located in the north woods of Wisconsin near the small town of Ackley, the green tower is primarily powered by the sun and wind, making it environmentally friendly. The new cell site also vastly improves the cellular service network in an area that was previously in a dead zone.

The low population density of

rural areas makes these markets less attractive to many national wireless providers, resulting in poor cell phone coverage. But providing exceptional customer care to underserved rural areas is Cellcom's niche. The Ackley tower is a prime example. With many pockets of dead zones scattered throughout the region, residents and vacationers suffered from spotty coverage. Cellcom recognized the need and took the initiative to improve the cellular network.

Building a network in a rural area often takes far more creativity than erecting a tower near a heavily traveled highway. In this case, one major obstacle stood in the way of providing cellular service — lack of electricity. Bringing in single-phase electrical service was cost prohibitive. To deliver superior wireless phone coverage, Cellcom's team of engineers had to come up with an innovative solution.

It was the perfect opportunity to work with emerging technologies

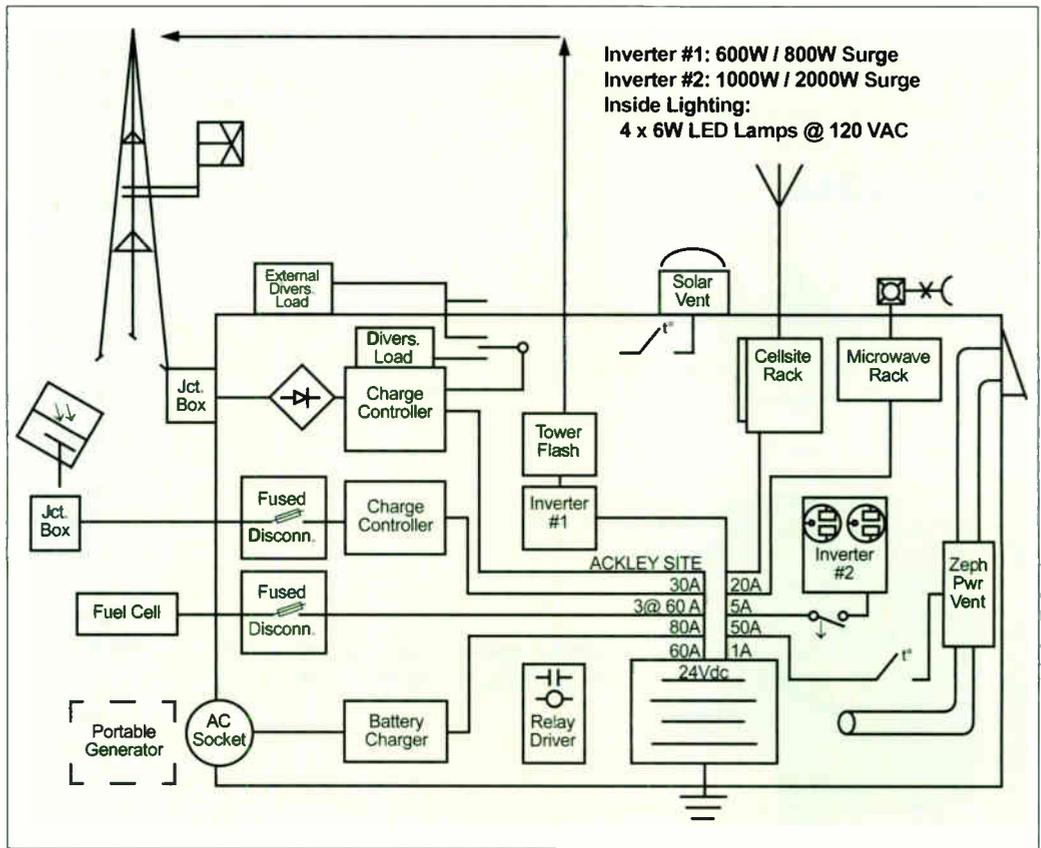


Left: T1s and Ethernet connections were delivered to the site using a licensed Alcatel microwave system. The system features a redundant microwave link, but it is not a hot standby configuration. To conserve energy, the two are never used simultaneously. **Right:** The primary source of energy for the tower is sunlight collected by a 6.3-kilowatt Kyocera solar-panel array. Energy gathered from the sun is converted into electricity and stored in Rolls Surette batteries.

that incorporate renewable energies. The engineering team carefully reviewed and evaluated a wide range of alternatives, including various generators and fuel cells. The final design was a cell site powered mainly by solar cells and supplemented by wind. It was the first of its kind, not just in the state, but also for the Midwest. Although the green tower physically resembles other cell sites, it incorporates Nortel's next-generation technologies.

The primary source of energy for the tower is sunlight collected by a 6.3-kilowatt Kyocera solar panel array. The energy gathered from the sun is converted into electricity and stored in Rolls Surette batteries.

The cell site features multiple backups to ensure continuity of service. Wisconsin winters can be long and dark. On cloudy days, a 1-kilowatt wind generator located halfway up the 300-foot tower supplements the solar power. Together, the solar cells and wind generator can store enough



A schematic shows the electrical energy flow of the cell site, beginning at the left. The top junction boxes bring in solar and wind power. Below them is the hydrogen fuel cell. The portable generator is represented at the bottom. All lines meet at the 24-volt DC Rolls Surette batteries (bottom right), which then feed power to the cellular and microwave radios and, through an inverter, to the tower lighting.

energy in the batteries to operate the cell site for three days.

Fuel cell backup

A ReliOn hydrogen fuel cell serves as backup to the solar and wind energy

producers, which gives cell techs 24 hours to reach the site for troubleshooting. The final backup is a diesel generator that can be hauled to the site on a trailer and connected to maintain service if all other power sources fail.



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Equipment for the green cell site underwent rigorous testing prior to installation. Panels were set up for December 21, the shortest day of the

year and the poorest day for sunlight. It was the perfect time to put the design through worst-case scenario testing.

Assembling a system that would be

simple from a maintenance standpoint was also critical to the design. A solar-powered cooling unit was installed to power a fan during the day, pulling heat out of the building in the summer.

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Heat for winter

In the winter, temperatures in northern Wisconsin frequently dip below zero. The excess electrical power from the solar panels, supplemented by a backup propane heater, is used to heat the building. The small facility does not generate a lot of heat. Flooded or wet cell lead-acid batteries store surplus energy. Team members visit the site on a scheduled basis to keep the battery electrolyte levels up.

Another design requirement was to make the cell site as energy-efficient as possible. T1s and Ethernet connections were extended to the site using a licensed Alcatel microwave system. The system features a redundant microwave link, but it is not a hot standby configuration.

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To conserve energy, the two are never used simultaneously.

Efficient lights

To further conserve energy, the tower's aviation obstruction marking takes the form of paint to avoid the need for daytime strobe lights. Red LED lights from TWR mark the tower at night. The LED lights consume about 120 watts of power delivered by an inverter at the tower base. The facility's base transceiver station is a Nortel model 3031, a relatively efficient unit. A timer that turns them off automatically controls area and interior lights; thus, if a cell site tech inadvertently leaves the lights on, there is no risk of depleting the batteries. The use of compact florescent lights helps to reduce power consumption.

The maximum amount of power that can be generated by using both the solar panels and the wind generator is about 79 kilowatts on the longest day of the year,

assuming average wind conditions. On the poorest day for sunlight, December 21, only 41 kilowatts of power is produced. With the energy conservation methods used at the site, the maximum power needed per day is about 19 kilowatts.

As a result, even on the worst day, the cell site has available at least twice the power required to keep it running. When the facility produces extra energy, it has to be dissipated to avoid overcharging the batteries. Excess energy powers resistors that heat the building during winter months. During



Wind-powered electrical generators supplement electricity produced by solar cells. On cloudy days, the cell site receives extra energy from a 1-kilowatt wind generator located halfway up the 300-foot tower.

the summer, heat from the resistors is dissipated outside.

400 digital sites

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Front and center in the beige enclosure is a ReliOn hydrogen fuel cell that serves as backup to the solar and wind energy producers. The backup gives cell techs 24 hours to reach the site for troubleshooting.

the green cell site has proven to be reliable. The facility has added a site to the nearly 400 digital cell sites providing

service to rural customers in northeast and central Wisconsin. Based on the success of the green

tower in Ackley, Cellcom has committed to building a second alternative-energy cell site to be located on Chambers Island off the coast of Wisconsin in Lake Michigan.

Cliffs lining Door County's rugged shoreline block signals from mainland towers, leaving many area residents with limited cellular service and also limited radio coverage for emergency personnel. By providing a signal at the island level, the planned green cell site is expected to deliver improved cellular reception for residents and radio coverage for public safety workers.

Never too much capacity

In the absence of any electric grid service on Chambers Island, the cell site will take its power from batteries charged by solar panels at the base and a wind turbine installed midway up the tower, similar to the alternative-energy cell site in the heavily wooded area of Ackley. An important lesson learned from the

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North Woods deployment will affect the development of the second green site: It is impossible to have too much battery capacity or energy-generation capacity. Based on this understanding, the solar-array panel capacity was increased by 33 percent and the wind generator capacity was increased by 50 percent on Chambers Island.

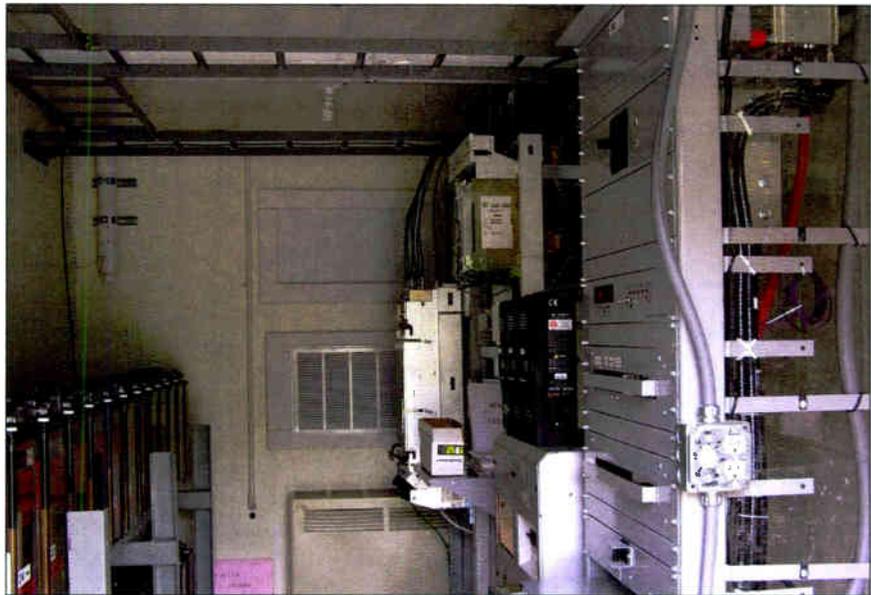
Lack of accessibility affects the deployment on Chambers Island. At times during the winter, commercial transportation to the Island is unavailable, which makes exchanging hydrogen bottles impractical. The engineering team had to develop a different approach, and ultimately decided to use a 24-volt DC, 6,000-watt propane generator as a backup, because the entire system operates on 24 volts DC. Propane for this location is more easily obtained and

When the facility produces extra energy, it has to be dissipated to avoid overcharging the batteries. Excess energy powers resistors that heat the building during winter months. During the summer, heat from the resistors is dissipated outside.

stored in a larger quantity.

The extra effort required to work around the unique issues associated with Chambers Island is expected to be worth the trouble. The cell site was equipped with CDMA 1X voice and data and was activated this year. The wireless telecommunications service that the cell site provides is expected to give residents and tourists the peace of mind of knowing that rescue workers have much-needed radio coverage in the case of an emergency. agl

Jim Lienau is chief technology officer and vice president of technical services for Cellcom, Green Bay, Wis.



A view inside the cell site shows all the electrical and radio components. At the left is the solar-power battery rack. In the center is a vent and below that is a propane heater. On the right, closest to the far wall, is the Nortel cellular radio. In the second rack on the top is the microwave radio. Black boxes on the third rack are charge controllers. The tall, silver panel in the closest rack contains circuit breakers.

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How to Use Scale Models Of Tower Installations

From marketing antenna space rental property to proving a case involving possible liability in accidents involving personal injury and fatalities, scale models of antenna sites can make the difference.

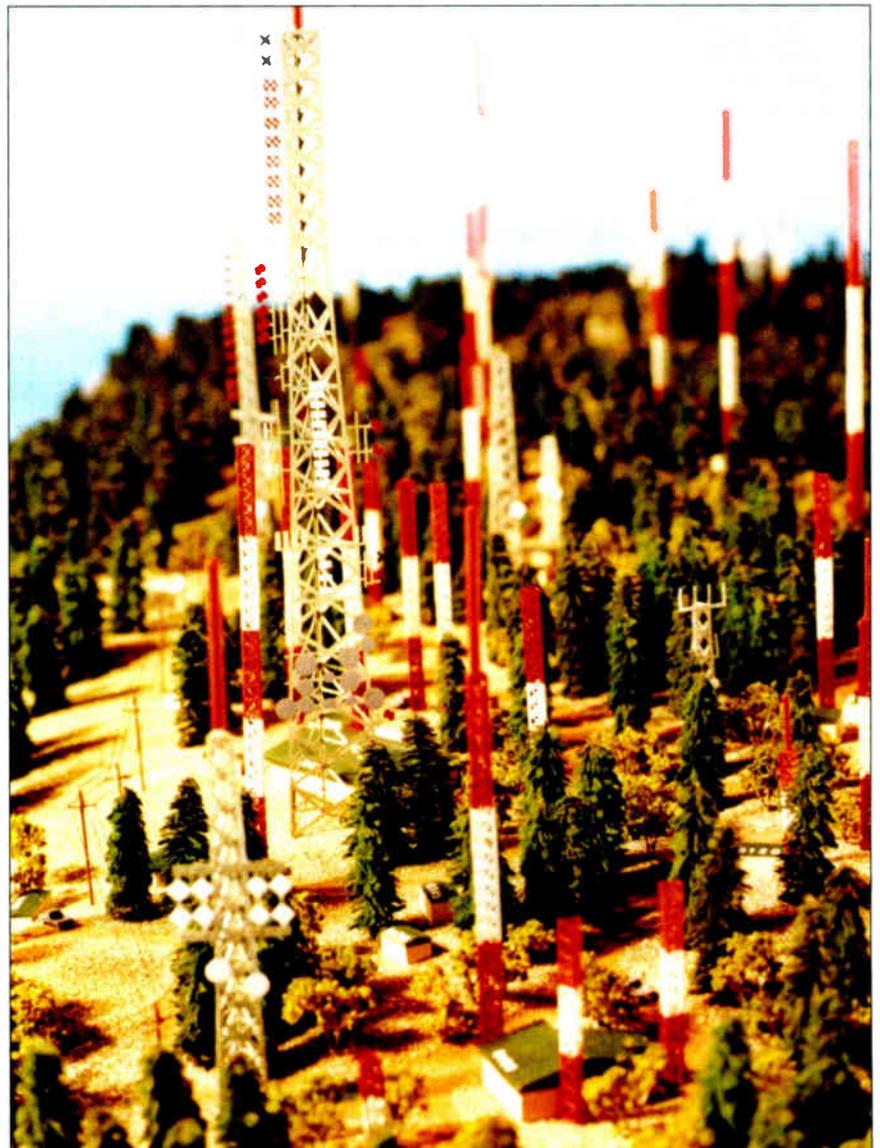
By George Filmer

Cheyenne Mountain is located just west of Colorado Springs, Colo. The North American Air Defense Command, NORAD, occupies space inside the mountain, deep underground. A commercial antenna farm owned by Cheyenne Propagation uses the top of the mountain, boasting multiple transmitter sites at 9,440 feet above sea level.

The scale model pictured on these pages was the product of curiously propitious timing for me. Bob Street, one of the owners of Cheyenne Propagation, had contacted my friend Mark Huddleston of Accurate Dimensionals about making a scale model of his antenna farm. Huddleston was skilled at cutting topography in polyurethane foam to make realistic scale-model landscaping. When Huddleston contacted me, I was working with a process for producing highly ornate, wrought-iron railings from architects' AutoCAD files in very rigid metal at 1:16 scale; that is, one inch on the model is 16 feet in reality. The Cheyenne Mountain model required 1:50 scale.

Street wanted a model to fulfill two functions. He wanted a showpiece for his boardroom that would give a sense of the entire mountaintop from an eagle's perspective and show potential clients where their antenna would be located. Cheyenne Propagation's boardroom has windows all around, so orienting the model on the true north/south axis helped the potential clients to visualize what coverage an antenna on the mountain would achieve.

The polyurethane foam cutting for the



Deep detail in the Cheyenne Mountain scale model shows antenna types and shapes along with landscaping and electrical utility distribution lines.

topographic base was no problem, likewise for the landscaping. The challenge was creating 1:50 scale towers in metal that showed the most relevant dimensions to scale, but also creating representational art for the various antenna types. Street is the kind of client modelmakers love. He knew what he wanted and appreciated early on that we were the people to make what he envisioned. His engineer, Jay Jacobsmeyer, P.E., president of Pericle Communications, worked closely with me during the developmental phase. The accuracy of the tower and antenna drawings was achieved as a result of Jacobsmeyer's diligence.

Combination of methods

While working on my previous architectural model, I was fortunate to discover a man who makes extremely detailed circuit boards for the aerospace industry. Working with him again, I developed the method and materials to make the model towers. He and I have yet to discover the physical limits of what we can create with my method and his proprietary photo-etching process and metal alloy.

The model prototype was the 300-foot tower with antennas, and we received immediate approval. The preparation and build time for the model was 10 man-weeks. I won't say the price Cheyenne Propagation paid, but to build something similar today would probably



cost more than \$20,000. One of the main reasons that clients prefer physical models to computer-generated graphics is that everyone can see something real. Clustering around a computer screen and looking at a so-called three-dimensional illustration, or even looking at a projected image on a wall, cannot replace a physical model that people can walk around, sticking things onto it and taking things off of it.

cost more than \$20,000.

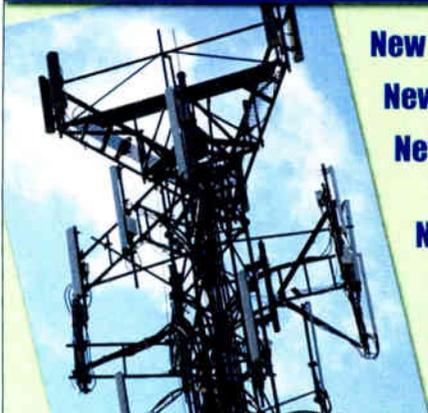
Since my partner on this project is no longer in business, I now work with the topographic modelmaker that NASA uses. He made the famous models of the surface of the Moon and of Mars using NASA data obtained from orbiting satellites.

The next interesting model for me was made for attorneys who were representing a tower owner in a case involving a tower worker and a fatal accident. My job was to build a model that represented exactly the physical dimensions and state of the tower

site at the time of the accident, including the specific antenna, buildings, and realistic coloration and landscaping. The attorneys wanted a large, courtroom-sized evidentiary model, so we decided on a 1:2 scale, that is, one inch equals 2 feet. This is also called "dollhouse" scale. With this size, it is fairly easy to find prefabricated doors and windows, siding and shingles for the buildings at a dollhouse store. Everyone left that courtroom with an emotional understanding of how small a man is on a tower and an appreciation of

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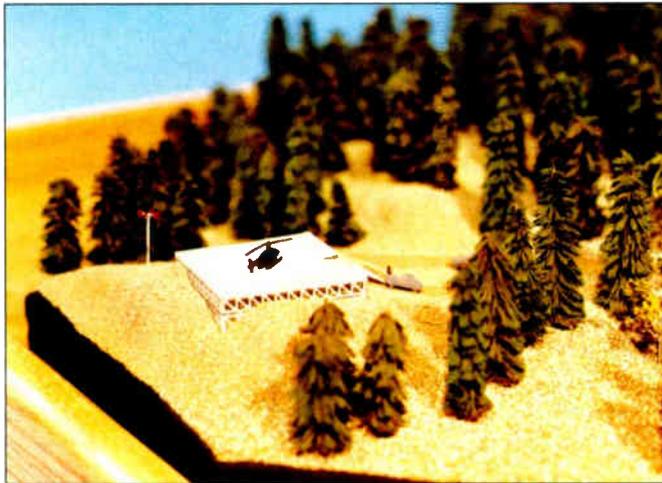
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what it might be like working in adverse conditions at height.

One of the main reasons that clients prefer physical models to computer-generated graphics is that everyone can



The build time for the Cheyenne Mountain model was 10 man-weeks. Details such as the helicopter landing pad make the model true to the existing mountaintop topography for a location where overflights by aerial photographers are restricted because of the military installation within the mountain.

see something real. Clustering around a computer screen and looking at a so-called three-dimensional illustration, or even looking at a projected image on a wall, cannot replace a physical model that people can walk around, sticking things onto it and taking things off of it. In law offices, a model helps everyone visualize an antenna site clearly, which

aids in developing legal arguments. Then, in the courtroom, a model helps the jury to understand what happened to a victim. Models often help county commissioners understand tower owners' proposals better.

When making a presentation to potential investors, a model of the proposed tower and antennas greatly aids in understanding how it would make money for the investor. Another use for the large-scale model would be in trade fairs.

Recently, I was asked if I could build a camouflage tower in 1:4 scale. If the real pieces to be

laser-cut in steel are drawn in AutoCAD, I can work with the same data. This would be a very expensive, albeit beautiful, model.

The example of the Cheyenne Mountain model brings inquiries for making models of other antenna sites, yet estimating the price for any new model is itself time consuming and expensive. Any potential

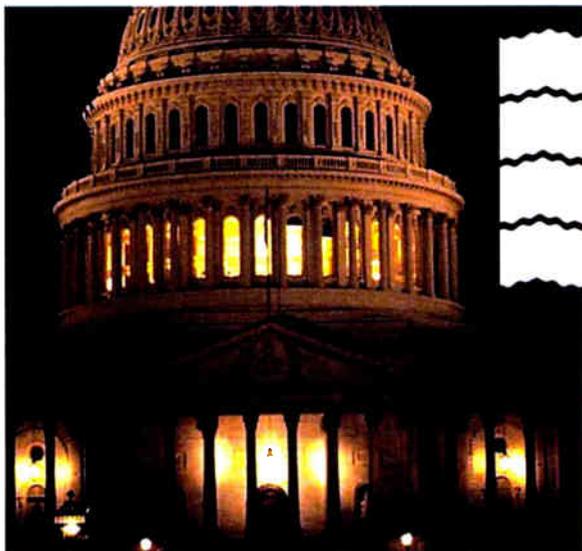
buyer for a new model wants to know how much it would cost to make a model of their tower and location. That's normal curiosity. The process of estimating the cost of a model begins with the engineer's drawings. It's necessary to determine how much time it would take to transform the engineer's drawings into modelmaking drawings that won't lose important detail during the photo-etching process. In addition, the data for the topographic base must be analyzed by my NASA friend, and flaws in the data make the computer that controls his micro-milling machine stop. As a result, it is only possible to estimate model prices for prospects who are seriously interested.

No competitive bidding

It may make me sound even more cantankerous, but I must add that I invented this scale-model tower process and I work with only the best subcontractors, so my models are of the highest possible quality. I do not enter into competitive bidding. Clients who require the cheapest model won't get one from me.

The Cheyenne Mountain model was a labor of love, and I am grateful to Bob Street and Mark Huddleston for the opportunity to take my modelmaking skills to a much higher level. **agl**

George Filmer is the owner of Tower Modelmakers in Denver. His email address is info@towermodelmakers.com; tel. (303) 954-9795.

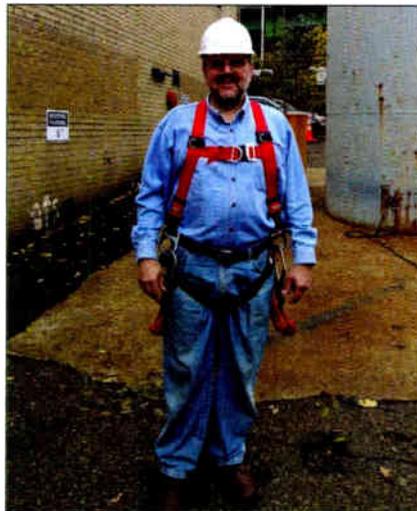


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RF Safety Solutions, founded by Richard Strickland, provides consulting services to companies and other organizations concerned with human exposure to RF radiation. The emphasis at every phase is to solve problems and communicate effectively. RF safety surveys and RF safety reports are designed to be easily undertaken, while including the technical details. RF safety programs work within each organization to solve RF problems.
www.rfsafetysolutions.com



“Tower Climbing Safety and Rescue” is an intensive two-day program by **ComTrain** that is designed to meet employer requirements and recommended ANSI/OSHA standards and regulations as related to work at wireless communications sites. Specific areas addressed include site hazard assessment/inspections, mandated safety meetings, fall protection (including fall-restraint techniques), fixed ladder usage and emergency contingency planning (including rescue techniques).
www.comtrainusa.com



Selective Radiation Meter

Narda’s selective radiation meter SRM-3000 is designed for measuring RF and evaluating safety considerations involving electromagnetic fields. With its triaxial probe, the SRM-3000 measures the electromagnetic field selectively, by service and frequency, regardless of the radiation’s source. The device is portable, battery-powered and immune to interference.
www.narda-sts.us

Miller Fall Protection has introduced Miller Tower Climbing Harnesses and Accessories. Featuring the Miller Revolution harness technology, the tower climbing harnesses offer greater mobility with the PivotLink rotary connection. The modular attachment design also provides connection points for a line of tool belts and accessories for easy snap-on/off flexibility. A fully padded rigid seat can be added or removed in the field.
www.millerfallprotection.com

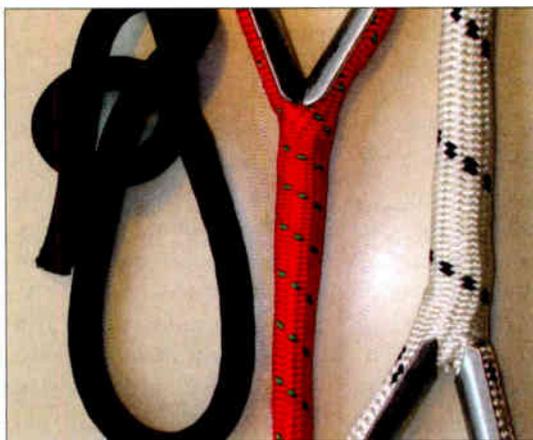
Telecommunications insurance is available from **Atlantic Risk Management**, providing coverage for independent cellular tower owners, paging companies and associated firms. Coverage has been specifically designed for the risks and exposures confronted by the communications industry. This program provides coverage to numerous tower companies located across the nation, as well as two-way radio operators.
www.atlanticrisk.com



Shock-absorbing Lanyard

The Manyard II shock-absorbing lanyard from **Miller Fall Protection** features a stretchable design (4 feet to 6 feet) that provides greater worker maneuverability. When contracted to 4 feet, it reduces the chances of tripping, snagging or dragging. The inner core is manufactured in a bright red color, making it visible should the outer jacket become damaged and unfit for service. In the event of a fall, a shock-absorbing inner core reduces the total force of a fall by 50 percent to 80 percent.

www.millerfallprotection.com



Novatec Braids manufactures polyester and Honeywell Spectra fiber ropes that can be supplied with factory-spliced eyes and thimbles, which show no loss in strength when deployed and eliminate the need for tying knots in the rope. Knots, by contrast, can reduce the tensile strength of ropes by as much as 50 percent. Novablue and Starline load/safety lines are stocked in 600-, 1,200-, and 2,000-foot lengths. Polyspec rope with Spectra core minimizes weight carried aloft and winch drum size.

www.novabraid.com

Safety One offers a training program to make tower workers competent and their companies OSHA-compliant. Classes are designed for those who need fall protection, antenna and tower climbing skills, as well as safety and rescue training. The program includes classroom instruction, hands-on tower climbing and practical rescue scenarios. Training covers OSHA certification topics such as OSHA requirements, the physics of falls, personal protective equipment, and fall-protection concepts and equipment. Student-to-instructor ratios are maintained at 6:1.

www.sotc.com



Tower Climbing and Rescue Ropes

Sterling's SuperStatic ropes are available in diameters from 5/16-inch to 5/8-inch. The ropes are engineered for balanced construction that allows them to be used in a multitude of work and rescue applications. The company builds the ropes under a precise manufacturing system for strength and consistency. These ropes meet ANSI requirements for rescue ropes and are compatible with other gear, which is critical for tower rescue kits.

www.sterlingrope.com



Wire Rope Grab Safety Cable Device

GlenMartin RG-5000 wire rope grabs provide vertical fall arrest protection. The cable grab device is a cam-activated fall arrester that slides freely up and down a 3/8-inch steel wire cable. Working on both galvanized and stainless-steel cables, the cable grab is connected to the chest attachment points on climbing harnesses via a carabiner. It meets all OSHA and ANSI regulations for vertical lifelines.

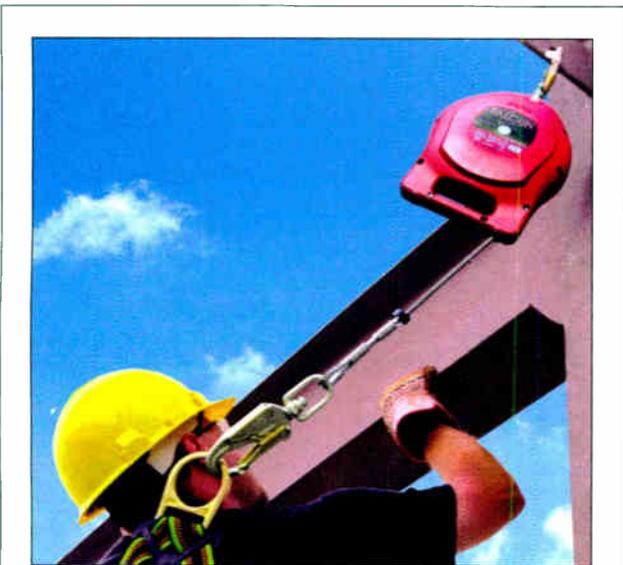
www.gmesupply.com



Tower Climbing Harness

French Creek Production's full-body tower climbing harnesses are designed to protect the lives of tower workers. The 897ABT tower climbing harness is a full-body tower climbing harness featuring grommet/tongue buckle leg straps, adjustable front center chest D-ring, right and left hip positioning D-rings, removable tool belt, removable positioning saddle and 6-inch comfort back pad.

www.frenchcreekproduction.com



Self-retracting Lifeline

The Falcon self-retracting lifeline from **Miller Fall Protection** is constructed of high-impact-resistant nylon housing and designed for tough, rugged environments. Available in 20-, 30-, 50- and 65-foot models in both galvanized wire and stainless-steel wire rope, the Falcon SRL line features a built-in, ergonomically designed molded handle on the 50- and 65-foot units to provide support and leverage when attaching to overhead anchorage.

www.millerfallprotection.com

RF Safety Training

Global RF Solutions supplies RF radiation safety training for personnel working in the wireless communications industry. Professionals can view a variety of presentations dealing with various RF safety topics for personnel working in RF environments. All of the tutorials were developed with the cooperation of industry leaders.

www.grfs.net

Descender Belay Device

The PETZL I'D self-braking descender belay device with anti-panic function is available from **TES**. The product provides ease of use and increased safety when moving on a single rope. A descender regulates friction and controls the descent on a fixed rope. The braking mechanism consists of a pivoting cam, which pinches the rope and brakes the descent when the handle is released.

www.TowerGear.com



RF Safety Facility Signage

UniTech RF Safety Division offers rugged, low-cost, FCC-compliant tower safety and information signs. Shipping is prompt and there are no additional charges for customization such as colors, logos or multilingual text. Many sizes and materials are available, including adhesive labels.

www.unitech-rf.com

The Panther series self-retracting lifeline from **Elk River** is designed with an integral spring locking mechanism to pay out and retract the 3/16-inch galvanized steel cable lifeline. The compact, lightweight SRL features composite casing, a man-rating of 375 pounds and a fall indication swivel hook. It is available in several lengths: 15 feet, 20 feet, 30 feet, 50 feet and 65 feet. Includes carabiner and tagline.

www.elkriver.com

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AGL.....	46, 50	Message Center Management	40
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Andrew	15	Narda	19
Atlantic Risk Management	inside front cover	Nello	42
BirdBusters	50	Pendulum Instruments	43
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CDMI	40	Rosenberger Leoni Site Solutions	33
ComTrain	37	SiteMaster	50
CTIA	inside back cover	Specialty Tower Lighting	37
Elk River	41	Structural Components	39
Farlight	25	Subcarrier Communications	back cover
Flash Technology	17	Telewave	5
GlenMartin	13	Times Microwave Systems	11
Global RF Solutions	42	Valmont Structures	21
Hutton Communications.....	7, 9	Waterford Consultants	45
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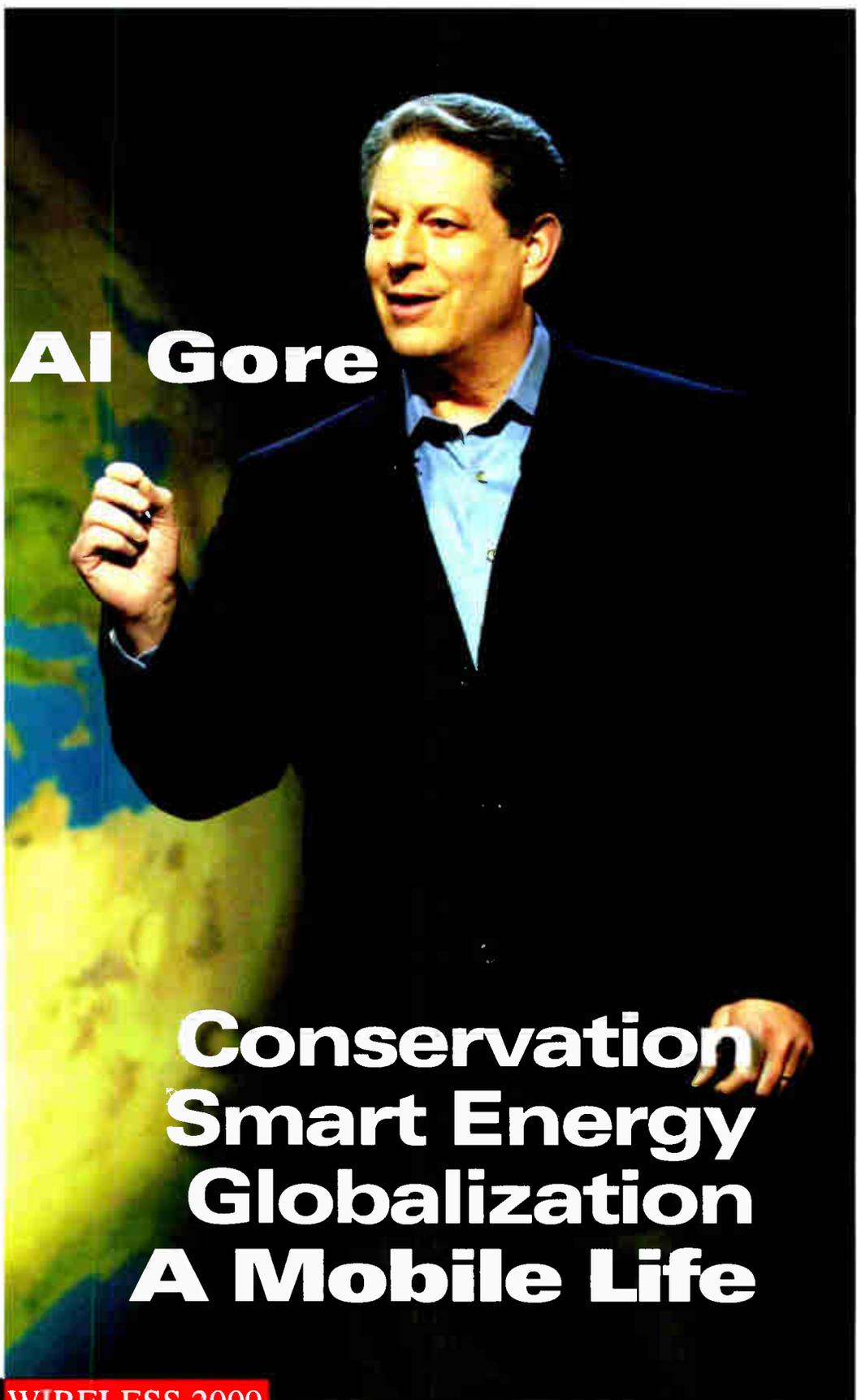
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Al Gore is an American environmental activist, author, businessperson, former journalist and former politician.

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