

RURAL telecom

MARCH - APRIL 2015

The Magazine
of Rural Telco
Management

**JASPER
SCHNEIDER**

**Rural Roots,
Community
Connections**

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the Internet
of Things

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Jasper Schneider: Rural Roots, Community Connections

By Hillary Crowder

Jasper Schneider has a head for business and a heart for rural America. At age 35, he leads a federal agency with a loan portfolio of \$60 billion and responsibility for electric, telecom, broadband and water utilities. Thousands of miles from his family in Bismarck, N.D., he is seeing the impact broadband services provide.

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NTCA represents nearly 900 small, rural, locally owned and operated telephone cooperatives and commercial companies in the United States and abroad, as well as state and regional telephone associations and companies that are the suppliers of products and services to the small and rural telephone industry. Our readers are the managers, directors, attorneys and key employees of these telephone companies as well as consultants, government officials and telecommunications experts.

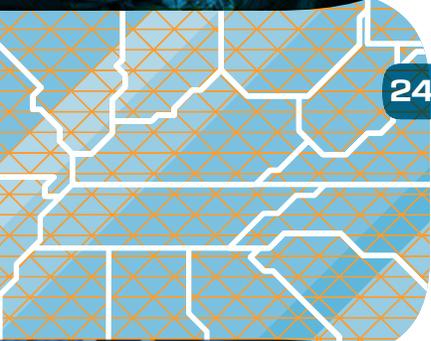


20

Solving the Complex Riddle of Cybersecurity

By Rachel Brown

What could be worse than terrorism, espionage or weapons of mass destruction? The answer to this grim riddle is cybercrime, according to James Clapper, the U.S. director of National Intelligence, who ranked cybercrime as the top national security threat. Find out how small rural telcos are working to adapt a new cybersecurity framework to help secure their networks.



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How Smart Rural Communities Are Expanding Opportunities

By Joshua Seidemann

NTCA members are working with local leaders to incorporate broadband capabilities into important aspects of daily life. These efforts are at the heart of the association's Smart Rural Community (SRC) initiative, which has included educational events on smart agriculture and distance learning, as well as original research on rural broadband adoption and use. These are the communities' stories.



28

From the Web of We to the Internet of Me

By Shawn DuBravac

The Internet of Things is our next Web experience. Connected devices at the 2015 International CES in Las Vegas will eventually make today's Web almost completely unrecognizable. Prepare yourself for a fully comprehensive, customizable and personal Web experience by learning both what this new experience will look like and how we got here.

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The Editorial Purpose of Rural Telecom is threefold: to inform readers of public policy issues affecting the industry; to provide insight on developing businesses and technology; and to share expertise and experience on management, marketing and customer service.

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My New Romance Is Kind of Square

It's always been a mystery to me why so many flock to Las Vegas every year to wander through aisle upon aisle of new gadgets and gizmos on display at the International Consumer Electronics Show (CES). I have never attended the show, so I'm probably not allowed to pass judgment.

But with all the media coverage, you don't even need to be there to experience it. Thanks in part to this one gathering, our society's love affair with technology can be felt in more aspects of daily life than ever before.

Yet for all the positive hype CES generates, some of the technologies mentioned in our wrapup of the show (see "From the Web of We to the Internet of Me") are real head scratchers.

Who needs a connected toothbrush? Others make me wonder how we ever lived without them. I had an "aha" moment recently when I read about a connected cube that automatically backs up all media files on your smartphone while simultaneously charging it wirelessly. What a breakthrough for media hogs like me. If adopting a new

technology were like finding a new life partner, I would ask this gadget to be exclusive on the first date.

But as all technology and broadband providers know, our society's shift toward more connected devices comes with some scary risks. Securing the information on those devices and the networks that support them is a tall task for even the biggest ISPs. Smaller players like rural telcos are also taking cybersecurity threats seriously and using tools the government has provided to engage in some tough discussions about their own networks.

No matter what kind of relationship your customers have with technology—a marriage of convenience or a red hot love affair—it's clear the stakes for broadband providers to sell and support all of these gadgets have never been greater.

Laura Withers
Director of Communications
lwithers@ntca.org



Technology on the Bus? Yeah, That's the Ticket

It was my wife's idea. "Let's take a Valentine's Day weekend trip to New York City!" I was quick to agree, but, always mindful of expenses, we wondered what the most cost-effective means of getting from D.C. to Manhattan might be.

In the past, I've taken the train, which, while comfortable and convenient, isn't much quicker—or cheaper—than flying between the two cities.

"What about the bus?" my wife asked.

Friends have told me for years about their experiences traveling via bus between D.C. and New York—both happy stories and horror stories. I knew of a couple of different bus companies I could choose from for such a trip, so I investigated the options.

Boy, was I surprised! No fewer than 10 companies now offer bus service from D.C. to New York. It's become a highly competitive business, and customers aren't shy about providing online feedback regarding their experiences. In sum, woe to those buses without Wi-Fi or bottled water; props to those with convenient pick-up points and a variety of departure times.

The proliferation of competition in the D.C.-to-New York bus sector is a boon for customers like me. Not

only can I skip the airport and the train station, but I can get to New York for much less money than I could via plane, train or—with all the tolls—automobile. But the bus operators need to provide a little sustenance (water) and some entertainment-enabling technology options (Wi-Fi). If they fail, I have plenty of other options the next time I travel.

In this issue, we look at how technology is transforming the independent-telecom industry—through the latest connected devices at CES, a new cybersecurity framework for the industry and several recently designated Smart Rural Communities. Together, these stories paint a picture of an industry moving forward to meet changing technological preferences and demands.

Like the bus operators delivering people from one major city to another, you want customers who know that your "bus" offers something that other competitors don't, and in a way that builds their loyalty toward your telco. Your investment in new technology could be just the ticket.

Christian Hamaker
Editor, Rural Telecom
chamaker@ntca.org



THERE'S STRENGTH IN NUMBERS



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As the competitive and regulatory challenges intensify, you look for partnerships and alliances that will strengthen your business. We hope NRTC is one of those partners.

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We're already seeing that pay dividends. We'd love to talk to you about it and see how our solutions can work for you.



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KIDS TODAY A TEEN'S VIEW OF SOCIAL MEDIA

Telcos trying to reach the youth demo would do well to heed one 19-year-old's view of different forms of social media.

> **Facebook:** "It's dead to us. Facebook is something we all got in middle school. [Yet] if you don't have Facebook, that's even more weird and annoying."

> **Instagram:** "By far the most used social media outlet for my age group. [It] hasn't been flooded with the older generation yet ... meaning it's 'hip' and 'cool' to the younger crowd."

> **Twitter:** "Your tweets are easily searchable. ... Like Facebook you post with the assumption that your employer will see it one day."

> **Snapchat:** "We can really be ourselves while not being attached to our social identity. ... When photos are 'leaked' ... we honestly do not really care. We aren't sending pictures of our Social Security cards."

> **Tumblr:** "You can really be who you want to be. ... It is pretty difficult to find you ... especially for the typical parent snooping around."

> **Yik Yak:** "A ton of friends in college have [it]. ... Everyone's on it during class. ... And everyone's on it after class."

►Source: medium.com

How Watching TV Alone Is the New Together-Time

If you're feeling guilty about watching TV by yourself, take heart. "Television's association with guilt has persisted since the medium's early days, but the nature and tenor of that guilt has evolved," wrote Lenika Cruz.

Although today's binge-watching on connected devices could induce viewer guilt, Cruz pointed out that most mobile viewing takes place, ironically, in the home.

"When homes had just one TV with a limited number of channels, didn't sitting down at night for a show with the family mean connectedness and good feelings all around? Contrast that with today. ... A kid could be on her Android, watching a Web series, while her parents watch 'CSI' 10 feet away. In other words, digital technology has also engendered a new kind of togetherness."

►Source: theatlantic.com

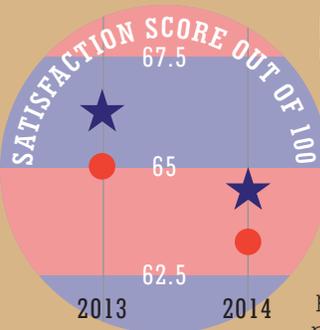


News Stories Take a Back Seat to Other Online Content

If you're trying to get customers to visit your telco website, keep in mind that the most popular content might not be stories or news.

That's the lesson from the New York Times. The paper claims it runs "all the news that's fit to print," but visitors to the paper's website in 2014 preferred non-news. The Times' Top 10 items of 2014 weren't stories but contributed content. Topping the list was a photo gallery, while online quizzes and Q&As also made the Top 10.

►Source: poynter.org



Satisfaction With ISPs Below That of Government

An American Customer Satisfaction Index report found that as much as Americans dislike government, they dislike their Internet provider even more. The finding "suggests that President Obama's recent proposal for government expansion in the Internet business may be a surefire recipe for miserable consumers."

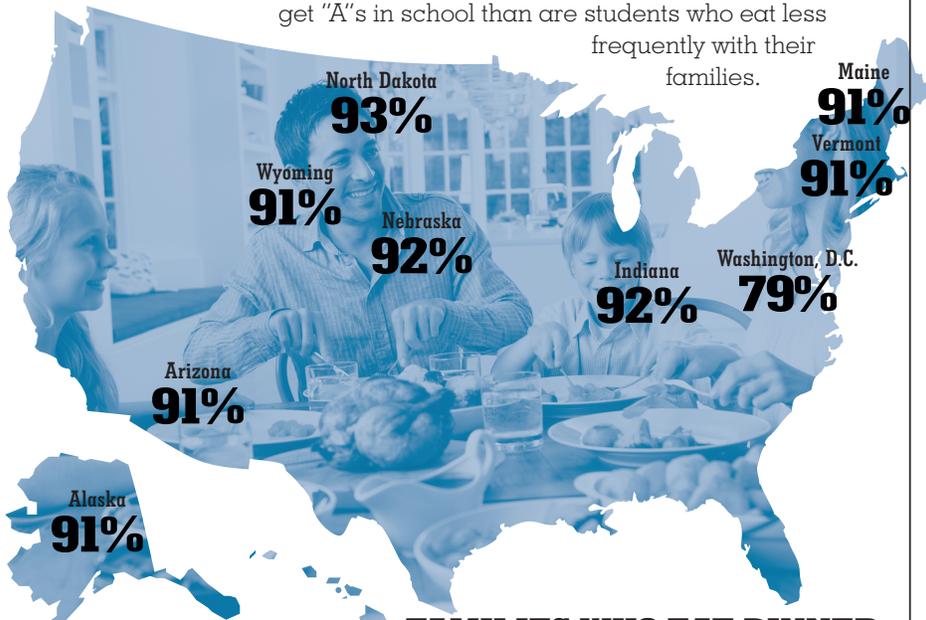
►Source: theweek.com; theacsi.org

★ FEDERAL | ISPs ●

RURAL STATES: WHERE FAMILIES DINE TOGETHER

While workaholism characterizes the nation's capital, rural America is a bastion of family together-time—at least based on whether or not families dine together.

"Nowhere do families make more time for each other than in South Dakota," wrote Reid Wilson, who pointed out that children who eat dinner with their parents perform better in school and are more likely to get "A"s in school than are students who eat less frequently with their families.



FAMILIES WHO EAT DINNER TOGETHER DAILY OR SEVERAL TIMES A WEEK

►Source: washingtonpost.com

Bricks-and-Mortar Stores Learn to Live With Streaming

The number of video stores has rapidly diminished in America as streaming of video content has caught on, but some bricks-and-mortar video stores have found a second life.

One entrepreneur chose to purchase a Brooklyn, N.Y., storefront for a video store just as streaming was catching on. Thanks to steady foot traffic, not to mention film-savvy employees, the store has attracted a strong customer base. Offering specialized fare not easily accessible via streaming also has proved to be a smart business move.

Patty Polinger, another video-store owner in Santa Monica, Calif., went the nonprofit route and turned a video store into a foundation. The store stocks hard-to-see titles, but Polinger said the bigger threat is Sunday-night TV and recorded content. "The DVR has done more to hurt us than Netflix," Polinger said.

What is your local video store doing to survive?

►Source: wired.com



A film director talks at Vidiots video store in Santa Monica

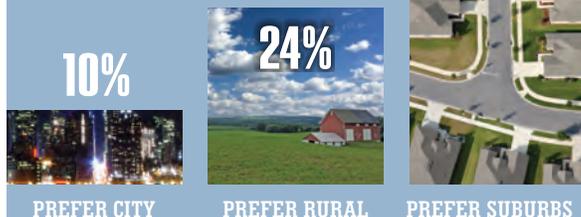
PHOTO: DAVID BLATTEL/COURTESY THE VIDIOS FOUNDATION, SANTA MONICA

Millennials Prefer the Suburbs to City Life, but Rural Is in the Running

Although younger people have flocked to cities in recent years, the results of a recent survey show that 66% of millennials—those born in the 1980s and 1990s—want to live in the suburbs, while only 10% want to live in a city center. Rural was the preference of nearly one in four (24%) millennials. The Wall Street Journal reported the findings from a National Association of Home Builders survey of more than 1,500 people born after 1977.

►Source: theweek.com

NYC AND FARM PHOTOS: SAM FERRO



Meetings and Emails and More, Oh My!

New tools that analyze email headers and online calendars have revealed what many managers have long suspected: They're drowning in meetings and email.

Seattle, Wash.-based VoloMetrix discovered that some groups at California-based Seagate Technology were spending more than 20 hours a week in meetings and that a consulting firm had bombarded Seagate with upward of 3,700 emails in a year. Seagate calculated that unnecessary email and meetings had cost its 228 employees more than 8,000 work hours.

One middle manager in a study by consultant Bain & Co. and VoloMetrix learned that after he'd read and responded to unnecessary emails and attended meetings that shouldn't have required his presence, he had only 11 hours a week to spend alone on core tasks.

►Source: wsj.com

#RuralIsSocial

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socialmedia](http://www.ntca.org/socialmedia)



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The Hill:
Ensuring
rural access
to reasonably
priced video
programming.



@FirstNetGov

"You will all play an
important part in
(#NPSBN)."

@NTCAconnect's
Steve Pastorkovich to
#buildwireless
attendees.



@WhiteHouse

Big news: President Obama
is taking new steps to help
more Americans access
#BetterBroadband.



KCTC

Kalona News: Rural telephone cooperatives
already providing broadband services.
[facebook.com/kalonatelco/]



@RepGwenGraham

Bringing Internet to rural areas, affordable
housing & making college more accessible are
all bipartisan ideas we can work together on
#SOTU.



@TogetherIsWorse

Today @COMPTEL, ITTA &
@NTCAconnect announce
new coalition to deny
#ComcastTWC merger.
#DontComcastTheInternet



@Michael_Knutson

Rural by Choice - Karen Fasimpaur
(via @dailyyonder) Great example of
changing the #rural narrative.
#ruraliscool



@ployd

@NTCAconnect
Shirley Bloomfield
Keynote at #ATA2015
was informative,
spot-on and well
done!

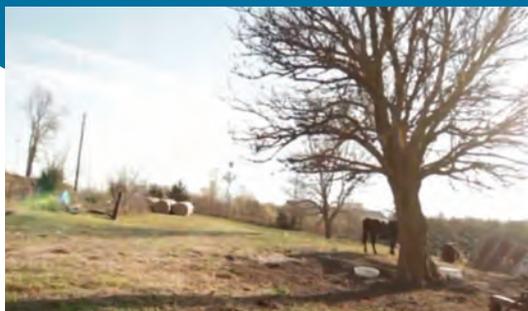


@coreyanderson
Plenty of valuable
#data to be extracted
from this
@NTCAconnect
#wireless #survey.



@metaswitch

Nice video by @NTCAconnect,
highlighting rural communities and
service/solution providers.



@DirkBeveridge

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An Evolving Video Marketplace



A few months ago I had the opportunity to catch up with the chief executive officer of the American Cable Association while attending a dinner with FCC Chairman Tom Wheeler in Texas. We talked about everything from ongoing retransmission consent issues to megamergers and the proposal introduced last year by Sens. Jay D. Rockefeller (D-W.Va.) and John Thune (R-S.D.) that would reform the retransmission consent process and allow consumers to decide which local stations they would like to receive. With so much at stake and an increased interest among members of NTCA-The Rural Broadband Association, video issues will be a top priority for NTCA both on Capitol Hill and at the commission.

In fact, a recent survey we conducted found that more of you than ever before are in the video business, with 77% of respondents reporting that they are providing video service to their customers. But challenges associated with offering video services abound: access to reasonably-priced programming remains your chief concern, with 99% of survey respondents citing it as the main reason they do not offer video services. Similarly, 72% named competition with larger, national providers as a top concern.

Last summer we filed comments with the commission urging it to consider updates to retransmission consent rules, including a proposal to prohibit programming vendors from requiring rural multichannel video program distributors to pay for undesired programming in order to gain access to desired programming and to forbid arrangements that tie desired broadcast programming to other video or online programming.

That is why we were interested to see that the commission is taking steps to reclassify multichannel video programming distributors as Internet-based video services, putting them in the same league as traditional content providers. We hope that the notice of proposed rulemaking released late last year will prompt a deep-dive on distribution concerns in the video marketplace as well as continued recognition that the underlying broadband networks—your networks—make access to any content possible.

We are also optimistic that the conversation about LOCAL CHOICE, legislation that would put the power in consumers' hands when it comes to requesting the local channels they wish to receive, will be revived in Congress. We are working with Thune and Senate Commerce, Science and Transportation Committee staff to reintroduce the proposal. The

legislation also proposes a series of revisions to retransmission consent rules that would allow the commission to step in and reach an agreement if necessary. We also recently submitted comments to the House Energy and Commerce Committee regarding video policy to help with their rewrite process.

Another high-profile development on the video front is the proposed merger of Comcast and Time Warner, which NTCA believes would undermine the good work being done by Congress and at the commission, and which would give the megacorporation a greater ability and incentive to control prices, terms, conditions and availability of content. We joined forces with more than a dozen other groups aiming to put a stop to the proposed merger and encouraged the FCC to deny the request. NTCA members have left no stone unturned in an effort to develop and sustain a mix of attractive and affordable services, and we know video is a critical piece of that puzzle. With your help, we will continue to work toward ensuring that you are able to gain access to the content your customers want at a reasonable price. ■

Shirley Bloomfield is chief executive officer of NTCA-The Rural Broadband Association. She can be reached at sbloomfield@ntca.org. You can also follow her blog at ntca.org/ceoblog.



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Dual-Mode M2M: Consistent Connectivity for Rural Businesses

We're seeing machine-to-machine (M2M) communications pop up everywhere, yet I believe there's not a group that can benefit more from M2M than businesses with operations in rural areas. Whether it be a farmer monitoring his remote irrigation systems, a construction company keeping tabs on its otherwise unsecured equipment, or a mining company keeping track of its operations and output, M2M makes it easy for companies like these to manage and monitor their remote assets and know instantly, for example, when a pump breaks down and its output drops. At the same time, M2M helps these businesses save money by offering a more efficient way to monitor their incredibly valuable resources.

Consider this example: A company owns a multimillion dollar piece of mining equipment at a remote site. The owners would like to stay informed about the location and status of their investment, but need to do it from headquarters. The alternative—driving from location to location and spotting issues—is not a cost most companies can afford to incur.

Yet I believe the same characteristics that make businesses like these prime candidates for M2M-based solutions are also what's hindering them. Remote areas oftentimes have limited cellular coverage. Wireless connectivity can be limited by signal strength, and sometimes the nearest cell tower is miles away. In addition, although the alternative connectivity source

for M2M—satellite—is becoming more cost effective, it's still more pricey than cellular, especially when used to monitor assets 24/7/365.

The vast distances and sometimes difficult terrain found in rural areas pose obvious challenges for network coverage, quality and cost efficiency of M2M connectivity. So how can operators offer reliable, much-needed services to their rural customers despite these challenges?

Best of Both Worlds

The main issue has been that customers needed to choose: cellular or satellite. For many, the choice was obvious. Satellite won in many rural areas because cellular coverage was "spotty" and, as we know, data does not do well with spotty coverage.

However, I believe the most cost-effective way for operators to provide

M2M solutions in rural markets is to not offer cellular or satellite, but to utilize both, via dual-mode capabilities. Dual-mode is just like it sounds; applications, sensors and devices can easily connect to both cellular and satellite networks.

But it's not enough to just "connect," especially for assets in motion, such as construction equipment that moves from site to site. Businesses need their assets to connect and be tracked intelligently, utilizing lower-cost cellular connectivity as the default and satellite as the backup. These solutions need to maintain connectivity seamlessly as they are passed from satellite to cellular when a signal is available and back to satellite when the sensor goes out of range of the cellular network. As soon as it's back in range, the connection is seamlessly passed back to cellular.

The good news: This intelligent connectivity exists today in dual-mode transmission solutions, and we're starting to see not only devices and sensors brought to market with dual-mode capabilities, but provisioning and administration management platforms as well. New applications for tasks such as dual-mode remote asset management are also available or in development, so that the dual-mode nature—cellular, satellite or both—extends from sensor to application to provisioning and management systems, seamlessly.

With dual-mode capabilities, I believe customers can meet the three promises of M2M:

- > Save money through more efficient processes.
- > Make money by more effective monitoring.
- > Improve compliance with operating procedures and even industry regulations.

But more importantly, customers are ensured their assets are secure, no matter where they are located.



Andrew Silberstein is senior vice president and general manager of Globecom Network Services. Contact him at asilberstein@globecom.com.

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BY HILLARY CROWDER

JASPER SCHNEIDER HAS A HEAD FOR BUSINESS AND A HEART FOR RURAL AMERICA.

Appointed as the acting administrator of the U.S. Department of Agriculture's (USDA) Rural Utilities Service (RUS) in October 2014, Schneider left his post as USDA Rural Development state director for North Dakota and moved across the country to Washington, D.C.

**JASPER
SCHNEIDER**

**Rural Roots,
Community
Connections**

Now, at age 35, he leads a federal agency with a loan portfolio of \$60 billion and responsibility for electric, telecom, broadband and water utilities. Thousands of miles from his family in Bismarck, N.D., he is seeing the impact broadband services provide.

"I have four kids," he said. "Every night I'm able to connect with them and my wife via video chat."

Born and raised in Fargo, N.D., Schneider loves sports and is an avid Minnesota Twins fan. A self-proclaimed "geek," he became interested in technology and broadband during his college years.

"I loved computers and was always tearing them apart and tweaking them," he said. "I kept running into one particular problem, so I went online and did research. The Internet wasn't what it is now. I was using a dial-up connection, and wasn't finding information."

So, he came up with his own solution and started writing about it—blogging before that term was even defined. What started as a hobby became a support and marketing website, and Schneider realized the true potential and endless possibilities the Internet created.

"People thought we were this real company, but I was just a kid in

North Dakota doing better marketing support than the software company was."

As traffic to the website grew, so did the hosting cost. When the first \$700 bill came in the mail, Schneider considered shutting down his start-up. Instead, he put that first bill on credit. It wasn't long before advertising support made his investment pay off.







“The fact that people can live in just about every part of the country and have access to affordable electricity, high-speed Internet connections and access to clean, safe drinking water is going to transform us in ways that we haven’t even begun to imagine.”

A Drive to Serve

Upon graduation from Jamestown College, Schneider went to work for Cisco Systems working in competitive analysis. Eager to expand his career, he decided to go to law school. For the second time, after graduating from Hamline University School of Law, Schneider started his own business—this time a law practice. He said that is when his life came to a crossroads where he had to decide between a West Coast career with a multinational corporation and a deep dive into his own company. Instead he chose a completely different path.

“I decided to go back to North Dakota and get into public service. My dad died when I was only 21, and it impacted me more than I probably realized at the time. He was an attorney and a legislator, and losing him drove me to public service.”

He ran and was elected to the North Dakota Legislature. Then, in 2009, he was appointed to the state director position for RUS and ultimately took over for the agency after five years at the helm in his home state.

“When our former administrator left, they were looking for someone to take over, and I had worked with these issues in North Dakota. Almost every part of North Dakota falls under rural telco, rural electric and rural water, so it was somewhat of a good fit,” he said. “I was able to come out to Washington, D.C., without the full depth of experience of how to run a federal agency for the entire country but at least with what it takes to run it on a state level. So far, it’s been fascinating.”

While Schneider said his role as acting administrator is similar to being the state director, the challenges and opportunities are unique to the diverse geographic areas throughout the country. His distinctive perspective as a small business owner with rural roots is bringing new energy to the agency.

“I’m very optimistic about rural America. The investments made in the last five years to building out our electric capacity, deploying high-speed broadband, what we’ve been able to do with water, housing and the whole rural development suite, I think are going to fundamentally transform the way we live, work and do business in rural America.”

Those investments include the Broadband Initiatives Program that provided funding for projects under the American Recovery and Reinvestment Act of 2009. RUS awarded grants and loans totaling \$3.5 billion to help bring broadband services to rural unserved and underserved communities, including many NTCA member companies. A recent report by the Government Accountability Office found that 87% of those projects are complete or partially operational and are set to wrap up this summer.

Open Doors

Schneider said investments in access to broadband services like these are a crucial piece to the puzzle. Connecting rural

America opens doors to the rest of the world and offers endless resources to gather information and to promote products, skills and businesses in ways that never existed before.

“From the beginning of time, rural has always had a bit of lag time in information,” Schneider said. “We’ve had a digital divide, and a lot of that is being bridged. The fact that people can live in just about every part of the country and have access to affordable electricity, high-speed Internet connections and access to clean, safe drinking water is going to transform us in ways that we haven’t even begun to imagine.”

Schneider sees opportunities not just for small businesses but also for health care and education. For instance, he said telemedicine is a solution to the shortage of doctors and nurses among rural health care facilities. Broadband also allows school districts to be creative in offering K–12 students courses they would not ordinarily have access to. It also enables distance learning for higher education or finishing a GED certificate.

“All of these advancements happen because of broadband Internet. So I think we need to make sure that we continue to make these investments, engage our stakeholders and educate the regulators on the impacts that their decisions make on rural America—good or bad—and enforce why this large public investment is so important.”

While the economic benefits of investing in rural America abound, Schneider is especially touched by the personal networks that are possible once communities become connected. Of course, he has learned firsthand the importance of a social connection when chatting with his kids from across the country.

“What is neat about the broadband world as you dig deep is all of the success stories, whether it’s individual or people getting connected again, [or] somebody getting access to a degree that there’s no way they could have before,” he said. “But, what I probably hear the most is staying connected with your family and your loved ones. Whether it’s grandparents who are still on the farm or kids and grandkids that are hundreds and thousands of miles away, through technology you’re able to bridge that gap.”

Back Home

It is the people back home in rural North Dakota whom Schneider misses most. That is why he makes sure to get home regularly, traveling nearly every weekend.

“Seeing big numbers and massive investments is good, but going out and actually seeing the impact these projects have on rural communities is so rewarding. Seeing the fruits of your labor and that your work is actually benefiting lives is truly important to me.”

Trips like a recent one Schneider took to Tennessee and Kentucky for a Community Connect grant groundbreaking—

“People in rural America are wonderful, and I think the bedrock of our nation’s values are in rural America. If you think about the framework of the United States, really the roots are buried deep in rural America.”

an RUS program that grants money to rural telcos to extend service to an underserved area—are what it is all about. He said this particular project provided support to NTCA member company North Central Telephone Cooperative, Inc. (Lafayette, Tenn.) and will connect a portion of Southern Kentucky to fiber.

Last fall, USDA announced it was providing \$190.5 million in grants and loans for 25 projects in 19 states to make broadband and other advanced communications infrastructure improvements in rural areas through that grant program and the Telecommunications Infrastructure Loan program. Six NTCA member companies received Community Connect grants and nine received telecom infrastructure loans.

“That just would not have happened any other way, at least for years or decades,” he said. “I heard from a lot of people about how the connection is going to impact them, how they’re going to stay connected with their grandkids, and some people are just excited about Netflix. It’s exciting to me to see the impacts we are making that we haven’t even really fully realized just yet.”

‘There’s a Bigger World Out There’

While Scheider loves his job and is thrilled to be in the nation’s capital heading up such an influential and vital agency, his heart for rural America is what drives him.

“With all due respect to D.C., there’s a bigger world out there. People in rural America are wonderful, and I think the bedrock of our nation’s values are in rural America. If you think about the framework of the United States, really the roots are buried deep in rural America.”

Schneider encourages small providers and consumers in rural parts of the country to take advantage of the tools and resources readily available both online and through federal programs like those provided by RUS.

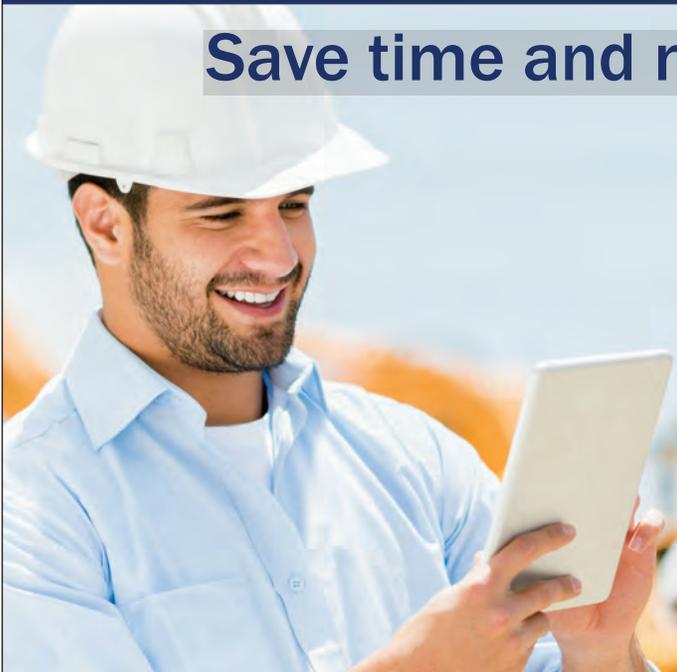
“Rural has never just happened on its own. It has always been about collaboration. It has always been about partnerships, teamwork and being creative to accomplish together what you could not have otherwise accomplished on your own.”

Hillary Crowder is communications manager at NTCA—The Rural Broadband Association. Contact her at hcrowder@ntca.org.



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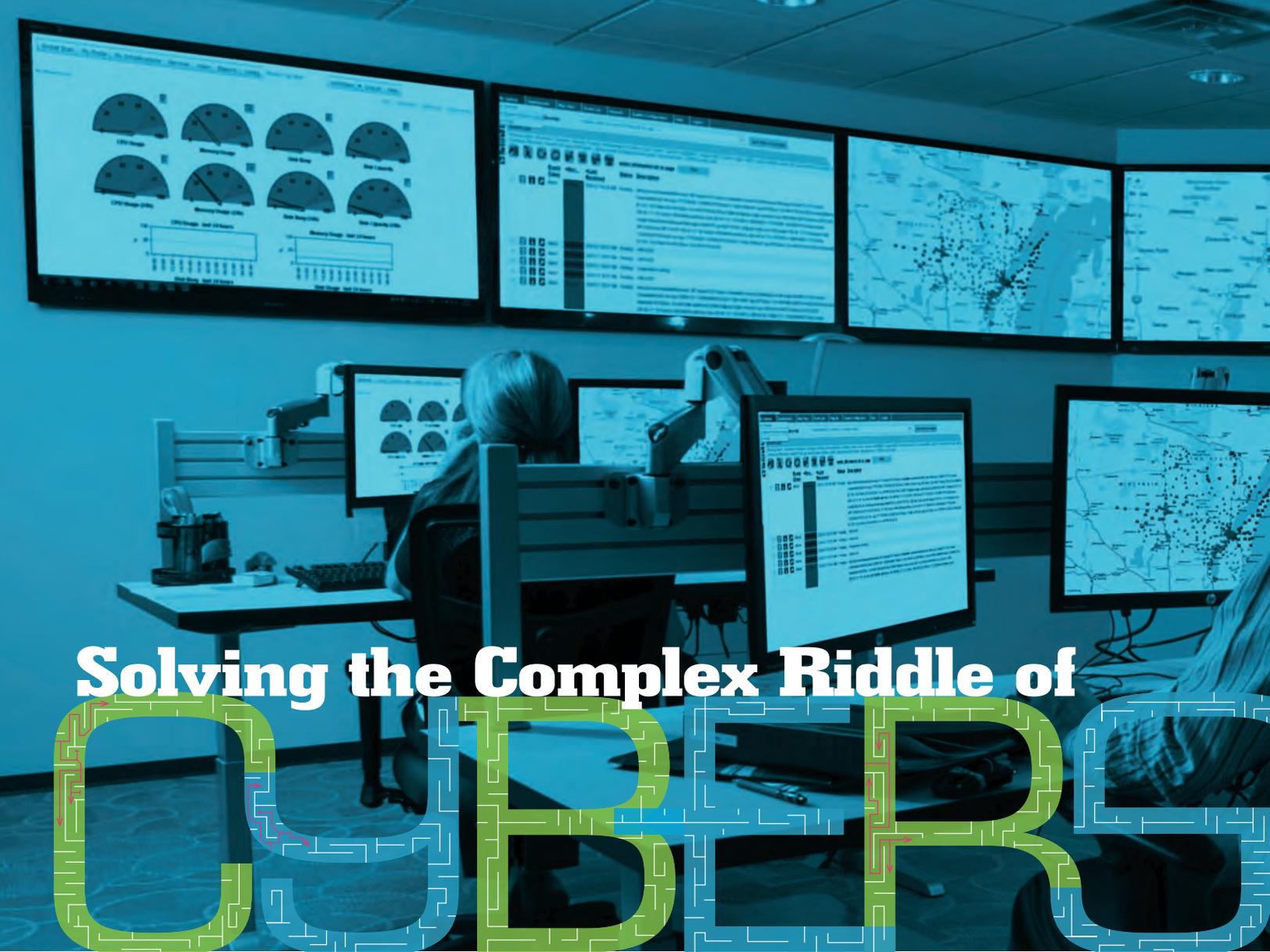
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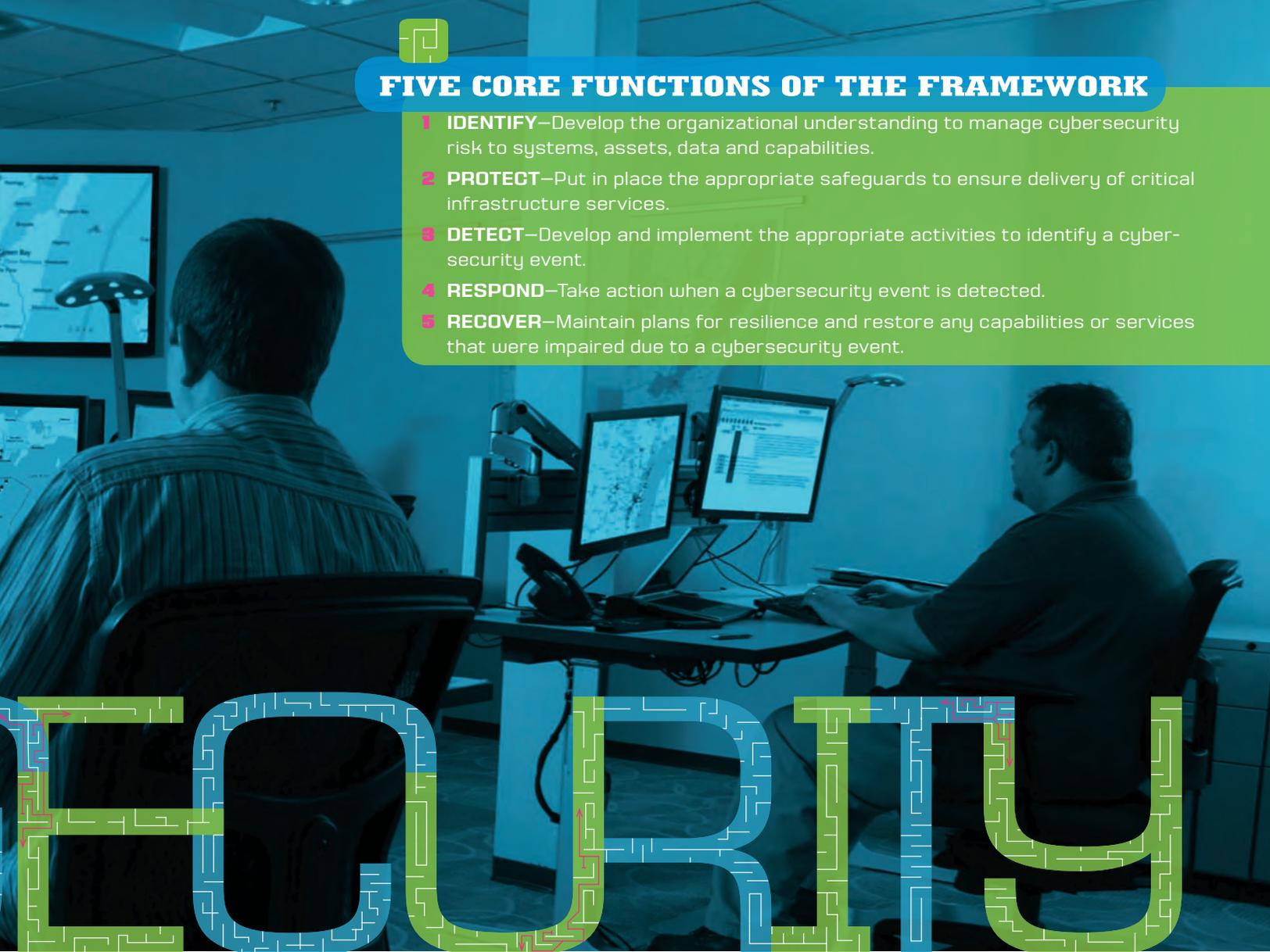
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BY RACHEL BROWN

What could be worse than terrorism, espionage or weapons of mass destruction? The answer to this grim riddle is cybercrime, according to James Clapper, the U.S. director of National Intelligence, who ranked it the top national security threat.

The numbers back up this startling assertion. IBM estimated that the average number of cyberattacks on a single organization over the course of a week is 1,400. This staggering number translates into an annual hit to the U.S. economy of somewhere between \$24 billion and \$120 billion, according to a joint study by the Center for Strategic and International Studies, a research firm, and security software company McAfee. The nearly \$100 billion discrepancy highlights the fact that cybercrime is notoriously hard to quantify because sometimes companies are unaware they've been attacked; other times, they're aware but don't disclose it.

More than money is at stake. The Obama administration has identified 16 categories of the country's critical infrastructure, ranging from financial institutions and the national water supply to the electric grid and communications system, and the administration issued an executive order and Presidential Policy Directive in February 2013 for all of these sectors to improve their cybersecurity measures. "The national and economic security of the United States depends on the reliable functioning of the nation's critical infrastructure in the face of such threats," the order stated.



FIVE CORE FUNCTIONS OF THE FRAMEWORK

- 1 **IDENTIFY**—Develop the organizational understanding to manage cybersecurity risk to systems, assets, data and capabilities.
- 2 **PROTECT**—Put in place the appropriate safeguards to ensure delivery of critical infrastructure services.
- 3 **DETECT**—Develop and implement the appropriate activities to identify a cybersecurity event.
- 4 **RESPOND**—Take action when a cybersecurity event is detected.
- 5 **RECOVER**—Maintain plans for resilience and restore any capabilities or services that were impaired due to a cybersecurity event.

SECURITY

Following the order's one-year deadline and dictate, the National Institute for Standards and Technology (NIST) published the "Framework for Improving Critical Infrastructure Cybersecurity" and spelled out 98 best practices for improving an organization's cybersecurity.

While rural America is immune to some types of crimes, it's important to note that cybercrime is not limited to big cities and big companies. IBM's research found that information and communications providers rank third in most attacked industries (following behind manufacturing and finance, respectively). According to the National Cyber Security Alliance, one out of every five small businesses is a victim of cybercrime each year; and of those hit, 60% go out of business.

What Could Be Worse

Ask small telephone company executives what's worse than cybercrime—even with these sobering statistics in mind—and they very well may answer: "A 98-item to-do list from the federal government."

Adam Sedgewick, senior IT policy adviser for NIST, said this reaction is human nature. "You can understand how a small entity would look at the 98 best practices and all the subcategories and naturally get overwhelmed," he said. "But we're not expecting every institution to address each of those practices like some sort of checklist."

Instead, NIST hopes that its framework serves as a guide to build a cyberstrategy, Sedgewick said. "This is all about mindset and trying to instill a system to better manage the risk of cyber threats," he explained. "It's asking everyone to look at their critical infrastructure and ask themselves: What do we have in place to recover from an attack?"

A good starting point is to focus on the five core functions, Sedgewick said. "Begin asking the questions in those first five areas to answer the question of: How can we identify our critical infrastructure and how can we protect that?" he said. "The next step is to put policies in place to deal with threats and to understand what's going on in your network."

▲ The new Nsight Teleservices Network Management Center in Green Bay, Wis.



TOO SMALL TO BE A TARGET? THINK AGAIN

A recent survey of small business owners by security software firm Symantec discovered these alarming attitudes about cybersecurity:

- > 77% reported that their companies are safe from hackers, viruses, malware or other cyberattacks.
- > 66% said cybercrime is not a concern to them.
- > 83% said they had no formal cybersecurity plan in place.

Now counter these assertions with data from the National Small Business Association, which reported that 44% of small businesses have experienced a cyberattack and that it has cost the individual company nearly \$9,000 to address.

As daunting as the current NIST framework seems, Jesse Ward, industry and policy analysis manager for NTCA—The Rural Broadband Association, pointed out that the foundation of the framework is risk management. “The heart of the framework is about identifying, assessing and responding to cybersecurity risk,” she said. She went on to note that this approach helps companies to prioritize the greatest risks to their business needs and functions, and subsequently to determine where and how best to apply resources to minimize, monitor and control the probability and impact of potential cybersecurity events.

“For many small businesses, this may be a new approach, a ‘new paradigm’ as [FCC] Chairman Tom Wheeler calls it, but it’s important to keep in mind that you are already making many risk/benefit decisions in the day-to-day operations of your business,” Ward said. “Cybersecurity preparedness is just another risk/benefit analysis, just as you already use every day.”

But 98 recommendations can still be overwhelming for a small company, especially when security boils down to one employee who wears many hats, including, perhaps, going out on service calls, too, Ward said.

Even if cybersecurity falls to one person, it’s still critically important because the threats and risks are constantly evolving and increasing, Ward said. “It’s not uncommon for small telcos to say, ‘Yeah, we’ve got cybersecurity covered—we’ve been dealing with this for years,’” she said. “But that can’t be the attitude because think about that statistic that says that 60% of companies that suffer a data breach go out of business. If your customers can’t trust you, your reputation is ruined.”

Out in the Field

Silver Star Communications (Freedom, Wyo.), a small telephone company serving eastern Idaho and northern Wyoming, volunteered to do a trial run of the framework

beginning in late 2013 to evaluate its strengths and weaknesses and to provide feedback to NIST, explained Jeff England, chief financial officer. The company has since embraced the framework. “We use it as a guide to improve our cybersecurity,” he said.

England said he appreciates that the framework can be adapted to individual companies and that not all 98 practices apply to the telco business. “It does have flexibility,” he said. “Not every bit of the framework was relevant for our business. Some of the processes and procedures didn’t apply to us because we’re a small company.”

It’s also helpful that the framework is voluntary, England said. “If it were a regulatory framework, then it becomes a checklist, and that doesn’t allow companies to respond to additional threats,” he said.

Even so, the framework was a hard sell internally at first, England acknowledged. “Some of the IT staff said it was too burdensome and we would need a full-time person just to handle this,” he said. “But I told them this was the wrong attitude. This is not more work; this is just something to help us do our existing work.”

Kathleen Whitbeck, director of network management for Nsight Teleservices (Green Bay, Wis.), a small telecommunications carrier that serves northeastern Wisconsin, echoed this sentiment. “The framework is a nice overlay for all the information that’s already out there in terms of cybersecurity because there already are so many standards and practices,” she said. “This does a nice job of putting it all in one place and making it a practical and applicable way to think about security.”

When Nsight first began using the framework, it did not come away with a checklist of to-do items, but it did raise questions and brought to light the need for many little improvements, Whitbeck explained. “One of the most helpful features of the framework was that it was a prompt for better dialogue and discussion,” she said. “As a small business, there’s a tendency to do things on an informal basis. But the framework forces you to take it up a level and make things more formal, such as putting a process in writing, having more documentation, having clear roles and responsibilities. Often small companies will have a tacit understanding of who does what, but as a company grows, those lines can get blurred.”

“[THE FRAMEWORK] DOES A NICE JOB OF PUTTING IT ALL IN ONE PLACE AND MAKING IT A PRACTICAL AND APPLICABLE WAY TO THINK ABOUT SECURITY.”



Kathleen Whitbeck
Nsight
Teleservices



A NEW PARADIGM

A Long Road

England agreed. “The framework fosters discussion and it serves as a road map,” he said, pointing out that it’s a long road. “This framework is a three- to five-year plan.”

Nsight’s Whitbeck noted that the framework is a working plan to strengthen a network year over year and that one of its strengths is that it lays out a strategy to continually improve cybersecurity practices. “It’s just like safety and driving,” she said. “Just because I drove safely yesterday doesn’t mean that I can’t have an accident tomorrow. You must maintain constant vigilance and strengthen your posture.”

CHR Solutions, Inc. (Houston, Texas), a technology consulting and business services company, praised NIST’s framework because it takes a process-driven risk management approach to cybersecurity threats. “It is a dynamic, ever-evolving process and not a lock-the-door-and-be-done-with-it sort of problem,” said Dennis Rose, director of business continuity and preparedness for CHR.

Still, Rose said he suspects that meeting all of the framework’s guidelines will be a difficult goal for most small telcos. “The best they may be able to accomplish is to prioritize their needs, and over time, continue to improve their standards,” he said.

Among the numerous cyber threats that face small telcos today, the two biggest are customer information theft and denial of service attacks (in which hackers inundate a particular site to overload its servers and force it to temporarily shut down), Rose said. “A threat/attack can stop a telco’s ability to provide service to their customers, and puts their customers’ personal information at risk,” he said. “Both of these threats can be managed and stopped, or at the very least made difficult, for would-be attackers with proper protocol.”

Whitbeck pointed out that small and large carriers alike can be affected by these threats, but she noted that small telcos are better positioned to thwart those attacks because they can respond faster. “We know our customers and can call them and work through a problem,” she said, adding that this is true in reverse. “If they’re trying to reach us, they can do so quickly because they’re not on hold and being routed through various customer service departments.”

Whitbeck urged other small telcos not to be intimidated by the framework and said it will likely prove to be an affirmation of what many are already doing. “So much of the framework’s practices boil down to good network hygiene with things like good software patch management,” she said.

For those still leery of wading through the framework’s 98 best practices, Whitbeck suggested waiting until the April release of the report from the FCC’s Communications Security, Reliability and Interoperability Council (CSRIC) IV Working Group 4, which is adapting the framework to the communications sector. “This will have done the heavy lifting and further refined the

Imagine a small house out in the country filled with valuable possessions. At first, the owners think the rural location means they don’t have to lock their doors, but then they are robbed. Afterward, they are careful to lock up each night. Despite this precaution, burglars come in through the windows. The owners bar the windows, but then the thieves burrow a tunnel to gain entry. The owners soon realize that theft is an ongoing threat, and they must take a new approach.

In the same way, companies—even small, rural companies, as well as urban—must take a new approach to cybersecurity. FCC Chairman Tom Wheeler praised the framework put out by the National Institute for Standards and Technology (NIST), saying this approach to cybersecurity represents a new paradigm because it is based on a proactive risk management strategy.

“If critically positioned companies just comply reactively with a regime of prescribed mandatory requirements, then our networks will always be a step behind,” Wheeler stated in a recent speech. “These threats move faster than a notice-and-comment rulemaking process. This new paradigm approach is the opposite of checklist compliance.”

Clete Johnson, chief counsel for cybersecurity with the FCC, pointed out that the framework is a flexible approach that companies can tailor to suit their particular needs. “It’s not a one-size-fits-all compliance checklist,” he said. “The framework may be particularly helpful for smaller companies that have just recently begun to assess and address the cyber risks they face.”

Adam Sedgewick, senior IT policy adviser for NIST, invited small telcos to take an active role in the process. “We welcome their questions, feedback and thoughts as they work to implement the framework,” he said. “We want to be a resource as well. Come to our workshops and visit our website.”

categories for wireline, wireless, etc.,” she explained. “It will give a more refined road map.”

NTCA is participating on the CSRIC IV Working Group 4, working to ensure that the framework is flexible and scalable for companies of all sizes and resource levels. “The small and medium business group will issue a standalone draft report that provides practical guidance with regard to how small companies can digest, apply and use the NIST framework to protect their organizations’ core network and critical infrastructure and services,” Ward said. “The report will provide illustrative ideas for how a small broadband provider can prioritize relevant subcategories within the framework.”

England said it’s never too soon to start thinking about cybersecurity. “Use the framework as guidance,” he suggested. “Pull it up and take one issue at a time. Pick up the pen now.” ■

Rachel Brown is a freelance writer. Contact her at rachelsb@aol.com.

How Smart Rural Communities Are Expanding Opportunities

BY JOSHUA SEIDEMANN

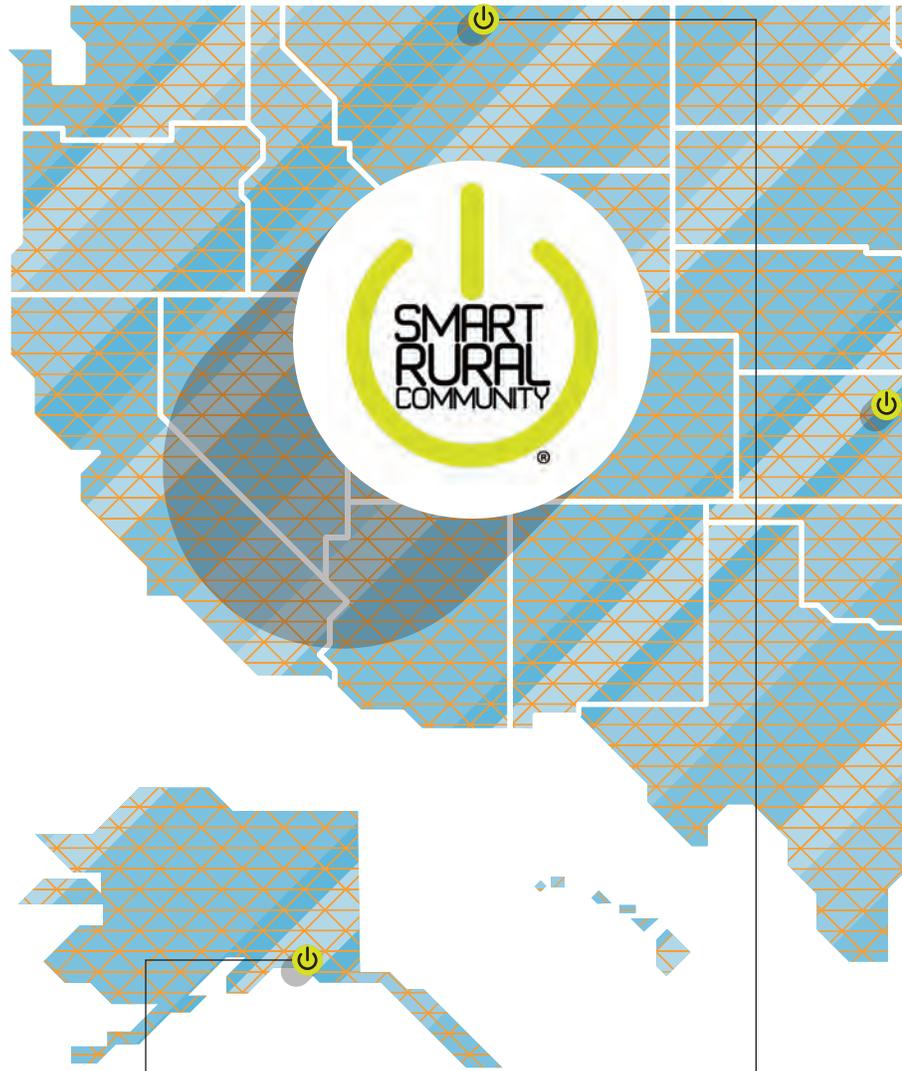
The Smart Rural CommunitySM (SRC) initiative of NTCA—The Rural Broadband Association emerged during a conversation at the association's offices in 2011. Representatives of a visiting tech firm described their vision for the integration of connected devices and appliances for home and industrial use, and explained how "smart cities" would stir a revolution in economic development and social interactions. As their presentation progressed, NTCA considered how the "smart cities" model could apply in rural regions.

More than three years after that meeting, SRC has grown to champion rural broadband networks and broadband-enabled applications that communities can leverage to foster innovative economic development, education, health care and other vital services. SRC has hosted educational events on smart agriculture and distance learning, and issued original research on rural broadband adoption and use. Rural areas across the country have been recognized as Smart Rural CommunitiesSM, and the White House Rural Council has celebrated the NTCA program. Recently, the SRC Collaboration Challenge announced its first series of matching-fund awards.

The heart of the SRC, however, remains the efforts of NTCA members that work with other local leaders to incorporate broadband capabilities into important aspects of daily life. These are the stories of the 2014 SRC Showcase Award recipients.

COPPER VALLEY TELECOM (Valdez, Alaska): Copper Valley's service territory covers 9,408 square miles, with a population of 7,074. The company's core platform is fiber to the node (FTTN) using ADSL2+ technology over copper for last-mile interface. The final 150 miles of the 800-mile Trans-Alaska Pipeline transects the Copper Valley service area and terminates at the Alyeska Oil Pipeline Terminal facility in Valdez; approximately 20% of the U.S. domestic oil production is shipped via this line. Daily operations are supported by voice and broadband capabilities, while wireless broadband enables communications between boat crews, weather stations and the U.S. Coast Guard. High-speed Internet capabilities support simulated disaster events for critical response training.

TRIANGLE COMMUNICATIONS (Havre, Mont.): Triangle's service territory covers 23,000 square miles, including two Indian reservations. Serving a population of 50,000, the company relies upon twisted pair, DSL, fiber to the home (FTTH) and fixed wireless services; Triangle's FTTH architecture is capable of 1 Gbps. In Montana, tax payment, vehicle registrations, business entity reports, child support payments and other obligations can be conducted online. Local jurisdictions in frontier territories utilize streaming video for witness and judicial proceedings, and the MontanaLibrary2Go enables patrons to access 10,000 downloadable e-books.



PREMIER COMMUNICATIONS (Sioux Center, Iowa): Premier's service territory covers 96 square miles, with a population of 9,000. Customers are served by dedicated fiber optic facilities, with local FTTH enabling 1 Gbps. A major window manufacturer looked for broadband connectivity and selected the Premier-served area over more than 50 other locations to build a new 260,000-square-foot plant employing more than 200 people. This factory maintains data transfer systems with distributors and retail sales nationwide, as well as with corporate headquarters 250 miles away.

WAITSFIELD AND CHAMPLAIN VALLEY TELECOM (WCVT) (Waitsfield, Vt.): WCVT service territory covers 669 square miles, with a population of 28,858. The company provides speeds of up to 1 Gbps on a core fiber network, and is upgrading remote switching sites to offer both fiber and VDSL2 to support speeds of up to 100 Mbps on existing copper. After Hurricane Irene hit Vermont in September 2012, the state of Vermont relocated 100 employees to a vacant space in the fully connected Mad River Valley Business Park. When the state employees returned to their home offices, WCVT and local offices attracted 130 employees of a 1,200-member dairy cooperative to the business park; those workers, in turn, support the local economy of shops, restaurants and other community institutions.

CONSOLIDATED TELECOMMUNICATIONS CO.
TRI-COUNTY COMMUNICATIONS COOPERATIVE
VERNON TELEPHONE COOPERATIVE
SOLARUS
HURONTEL
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FTC (Kingstree, S.C.): The Sumter County portion of FTC's service territory covers 681 square miles, with a population 108,000. The company uses three primary methods to provide broadband. ADSL is based on copper; passive optical network (PON), based on fiber optics; and Metro Ethernet, which can deliver up to 10 Gbps. FTC serves Shaw Air Base, which is home to the 9th Air Force, the 20th Fighter Wing, Air Force Central Command and Army Central Command. The installation hosts 8,000 military and civilian personnel, but the 9th Air Force itself is responsible for 29,000 employees and 400 aircraft in eight states and three other units. A 10 gigabit fiber optic circuit from FTC is the starting point for many military communications devices and techniques with layers of security and cross certifications.

TWIN VALLEY (Miltonvale, Kan.): Twin Valley's service territory covers 2,400 square miles. The company has broadband services available to more than 9,500 homes and nearly 1,500 businesses. Twin Valley supports the Clay County Economic Development Group (CCEDG), a nonprofit organization that works with local businesses to improve internal corporate structure and encourage new business startups. CCEDG utilizes a 100 Mbps pipe for communications and Web-based professional and entrepreneurial training.

NORTH CENTRAL TELEPHONE COOPERATIVE (NCTC) (Lafayette, Tenn.): The NCTC service territory covers approximately 900 square miles, with an average of 21 houses per square mile. The company provides fiber and ADSL2+ service ranging up to 1 Gbps to residential and business users. Following a 2008 tornado that killed 14 people and destroyed 231 homes, the company undertook comprehensive broadband commitments and now serves Macon County General Hospital, a 25-bed critical access hospital, and has reduced certain diagnostic protocols involving CT scans and X-rays from a length of days to a span of minutes.

PEOPLES RURAL TELEPHONE COOPERATIVE (PRTC) (McKee, Ky.): The PRTC service territory covers 542 rural and mountainous square miles, with a population of 18,460. The company services 95% of its customers with FTTH, which supports service up to 100 Mbps. The remaining 5% is served by ADSL2, but is in line for planned upgrades by April 2015. The area has the highest unemployment rates and acute poverty. Area students utilize the county's Owsley Schools Snow Bound Project, a pilot program aimed at reducing the impact of winter weather on education by enabling access to the Kentucky Virtual High School for courses and other online learning opportunities. PRTC also partners with Jackson County Schools and the public library to provide free community technology and broadband training.

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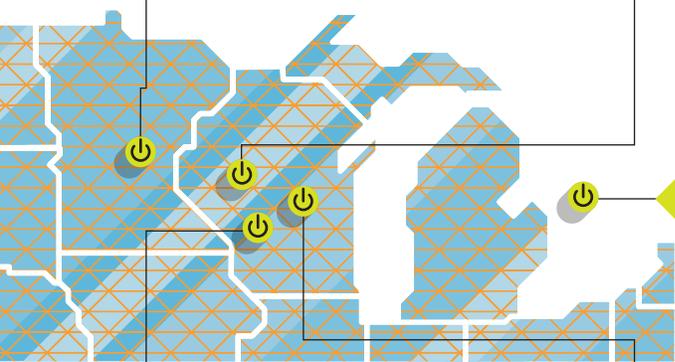


CONSOLIDATED TELECOMMUNICATIONS CO. (CTC) (Brainerd, Minn.):

CTC's service territory covers 2,925 square miles, with a population of approximately 48,000. The company offers FTTH in approximately 75% of its service territory, with residential offerings ranging from 1 Mbps to 1 Gbps, and fixed wireless Internet via 700 MHz and 3.65 MHz spectrum. Working with Independent School District 181 and four other community organizations, CTC constructed a 10 gigabit fiber ring around the Brainerd and Baxter communities that connects all area schools, government buildings and the local hospital. This collaborative undertaking has improved educational opportunities, interconnectivity and efficiency of local law enforcement, and has benefited health care entities in the communities.

TRI-COUNTY COMMUNICATIONS COOPERATIVE (TCCC) (Strum, Wis.):

TCCC's service territory covers 850 square miles, with a population of 32,000 spread across 17 small towns, the largest of which has a population of 2,200. TCC offers broadband via coaxial cables, DSL and fiber. A complete FTTH conversion is anticipated for 2015, with residential capacities of 30 Mbps. Tri-County attracted out-of-state business by securing the interest of a Texas mining company and building a fiber connection to the new site; Tri-County also networked dedicated connectivity to other mining sites for seamless communications between geographically disparate locations. TCC provides a redundant connection to the world's largest furniture manufacturer, allowing it to keep its business running around the clock and around the globe.



HURONTEL (Ripley, Ontario, Canada):

HuronTel's service territory covers approximately 310 square miles, with a population of 5,500; the company also offers service as a competitive provider to areas that have an approximate population of 10,500. HuronTel utilizes FTTN and FTTH, and with GPON and limited loop lengths can provide speeds for any needs, including gigabit speeds. Originally a cooperative offering dial up and DSL, HuronTel made a competitive foray into several small communities and made investments the larger incumbent was unwilling to provide. The company serves manufacturing, health care, agricultural and educational interests. HuronTel has grown fourfold from a staff of eight to 35; the average age of its staff is 34, and it is composed predominantly of young people who were reared and who now remain in their home communities.

VERNON TELEPHONE COOPERATIVE

(Viroqua, Wis.): Viroqua is 3.8 miles, with a population of 4,362. Vernon has deployed FTTH to nearly every home and business, and plans to upgrade existing 100 Mbps to 1 Gbps. A global food-processing and commodities-trading corporation with more than 30,000 employees maintains a grain storage facility in the Vernon service area that processes about 6 million bushels of corn, soybeans and soft-red winter wheat each year. Approximately 200 local farmers can spot sell, store or contract their grain in a process that monitors fluctuating grain prices, communicates bids and maintains real-time communications.

SOLARUS (Wisconsin Rapids, Wis.):

The Solarus service territory is 365 square miles, with 1,600 businesses and 25,179 residential dwellings. Ninety-nine percent of customers have broadband access, which is being upgraded to FTTH; T-1 connections are available where fiber is not yet deployed. Solarus presold fiber upgrades to 40% of businesses, working with its local Chamber of Commerce to create "Chamber Bucks" that Solarus purchases and presents to new customers in the amount of their local subscription rates. Those tickets, in turn, are spent in the community, coupling broadband expansion with "buy local" support and growth for local businesses.



Clockwise from top: Federal agency and military officials meet with NTCA members at a White House Rural Council celebration of Smart Rural Community • Doug McKalip, USDA; Keith Gabbard, Peoples Rural Telephone Cooperative, McKee, Ky; Nancy White, North Central Telephone Cooperative, Lafayette, Tenn.; Thomas Power, Deputy Chief Technology Office for Telecommunications, the White House; Brian Thomason, Blue Valley Tele-Communications, Home, Kan. • Chris Mishmash of Copper Valley Telecom, Valdez, Alaska, at the Mentasta central office. • Roger Nishi of Waitsfield and Champlain Valley Telecom hoists SRC road sign, Wimbledon-style • Gardonville Cooperative Telephone Association, Brandon, Minn., accepts a Special Recognition award for its work in telehealth services.



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- Tekoia SureMote remote control app
- Stack Alba responsive lightbulb + Nest home control system
- Samsung Wi-Fi enabled refrigerator
- Flower Power smart plant sensor
- Fitbit Surge fitness watch
- Apple iPhone 6
- DJI Inspire 1 personal drone
- Chamberlain MyQ garage door system
- HereO GPS watch for children
- Pacifi smart pacifier
- KiCo Pen insulin delivery system
- MyFox home security system
- Sensoria smart sock



BY SHAWN DUBRAVAC

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hen the 2015 International CES® show floor opened January 6 in Las Vegas, Nev., attendees saw the promise and power of technology firsthand across more than 2 million net square feet of exhibit space. In exhibitor booths, across conference sessions, on the keynote stage and throughout the show floor, innovation, creativity and wonder abounded at CES.



For many, the first products that come to mind when they think of CES are TVs, laptops and tablets. Indeed, industry powerhouses like Sony, Samsung and LG made their mark at the 2015 CES. But the number of nontraditional companies exhibiting at CES is growing. Every product, brand and company with a digital “pulse” had a reason to be at CES.

Much of the growth in the consumer technology sector involves digitizing everyday objects by embedding sensors into once-analog products. These sensors communicate with one another to create a networked connection known as the

Internet of Things (IoT). Through these sensors, we’re able

to digitally capture information in a way that accelerates the flow of this information to other people, services and devices. And, as sensors get smaller, faster and more affordable, their market penetration will expand. What was once technically difficult and not commercially viable because of cost and size is quickly becoming both technically and commercially feasible. The IoT is our next Web experience.

The connected devices at CES and those that emerge over the next decade will make today’s Web almost completely unrecognizable. Prepare yourself for a fully comprehensive, customizable and personal Web experience. But what will this new Web experience look like? And how did we get here?

Customizable Web

Think about how much the online experience has evolved

in the last two decades. Do you even remember the sound of

a 1990s dial-up connection? Twenty years ago, China made its very first online connection. Now the country has more than twice as many Internet users as anyone else, at 640 million and counting.

The Internet experience we enjoyed on personal computers back then was driven by a common and shared Web experience. This mass-produced Web offered the same information to everyone, a largely linear Internet experience. We spent time on a few websites consuming content made for the masses. Aside from personal finance and email, there was no truly personalized information on Web 1.0.

The ensuing mobile Web experience began as we knew it on our PCs—the same “big Internet” experience. Then, “mobile first” companies started to appear, bringing us a decidedly different Internet experience. These companies and services allowed us to access Internet information unique to us, relying on data like our mobile location. Around the same time, mobile platforms from companies like Apple and Google opened up to third-party developers. This ushered in a flood of services from individuals who understood consumers didn’t want a traditional Inter-

Boo-Keun Yoon, president and CEO of Consumer Electronics for Samsung, explored the implications of a fully connected world powered by the Internet of Things (IoT), which he called “science fact,” not science fiction, during his visionary CES preshow keynote. Yoon highlighted several scenarios of life made easier, healthier and more efficient because of IoT connectivity, including TVs that automatically pause when you leave the room, wearables that monitor brain waves to track biometric data and music systems that seamlessly transition from your home speakers to your headphones. “The Internet of Things is about people, not things,” he said.

From smart home tech, smart watches and fitness tracking devices to clothing, toys and automobiles, we are increasingly digitizing everyday objects, embedding sensors in thousands of new devices that allow us to digitally capture information in a way that accelerates the flow of this information to other people, services and devices. Global market revenue for sensors in mobile devices will reach \$6.5 million in 2015.



The Mercedes-Benz F 015 concept car, unveiled at the 2015 International CES®, can drive itself, has seats that swivel to face each other, and has a computerized brain to watch pedestrian traffic. The aim of the concept car is to maximize space, time and privacy, with the interior featuring gesture and eye tracking control with free floating driving instruments. Dr. Dieter Zetsche, chairman of the board at Daimler AG and head of Mercedes-Benz Cars, showcased the car during his CES keynote address, saying, “Mercedes aims to develop truly super-human autonomous driving ability.”



PHOTOS COURTESY OF CEA

Drones and other unmanned aerial vehicles took flight in the Unmanned Systems Marketplace at CES, featuring 13 exhibitors across 7,600 square feet of exhibit space. The latest models can capture video in 4K UHD, are available in a range of sizes, and can fly themselves or pair with a smartphone.



net experience on-the-go but a new experience that aligned with their unique and individual mobile needs.

The personal nature of the mobile phone empowered companies to create a more tailored Internet experience. Consumers wanted bite-sized pieces of the Web catered specifically to

their individual interests. And so, services like Yelp and FourSquare started pulling in information from users to provide a decidedly unique and customized Internet-enabled experience. Now you can open an app like Yelp anywhere, and if you've given the program permission to access your location, find the perfect spot for dinner nearby—or coffee, shopping, gasoline—in seconds.

Accessing location-based information on smartphones is only the beginning. Today, we find ourselves at the precipice of an Internet revolution—what I call our digital destiny. The universe of connected devices is set to explode



Entrepreneur, music producer, TV host and actor Nick Cannon plays virtual volleyball at CES using an Oculus Rift virtual reality headset. Immersive entertainment is an expanding market at CES, encompassing more and more categories of consumer technology. And virtual reality gaming technology is going mainstream.

once more. The number of objects connected to the IoT will expand over the next five years to some 50 billion objects. At CES, we saw smartphones, glasses and watches connected to the Web. But we also saw appliances, lighting, gardening tools, toothbrushes and just about everything else around us are now sensorized and connected.

The Next Internet Experience

The pattern is clear. The connected objects on the CES show floor today and in the future are capturing and delivering data to us, and in the process creating the next Internet experience. Imagine a thermostat that not only measures the outside temperature, but also intuitively knows what you'd like the temperature to be based on your activity level. You don't do a thing: The thermostat itself, in conjunction with other objects that know your body temperature, adjusts everything for you. What's more, these devices will be continually capturing information about us and our surroundings.

While this vastly more personalized connected future may jar some people, the goal is a living experience more tailored to the individual than anything we could have imagined a decade ago. With tens of billions of connected objects integrated into and throughout our lives, we'll begin to open up the next frontier of the Internet, one that is personal and customized. As the Internet of Things unfolds, we will truly enter the era of the Internet of me—and of you!

Shawn DuBravac is the chief economist of the Consumer Electronics Association (CEA)® and the author of the book "Digital Destiny: How the New Age of Data Will Transform the Way We Work, Live, and Communicate." Follow him at @ShawnDuBravac.

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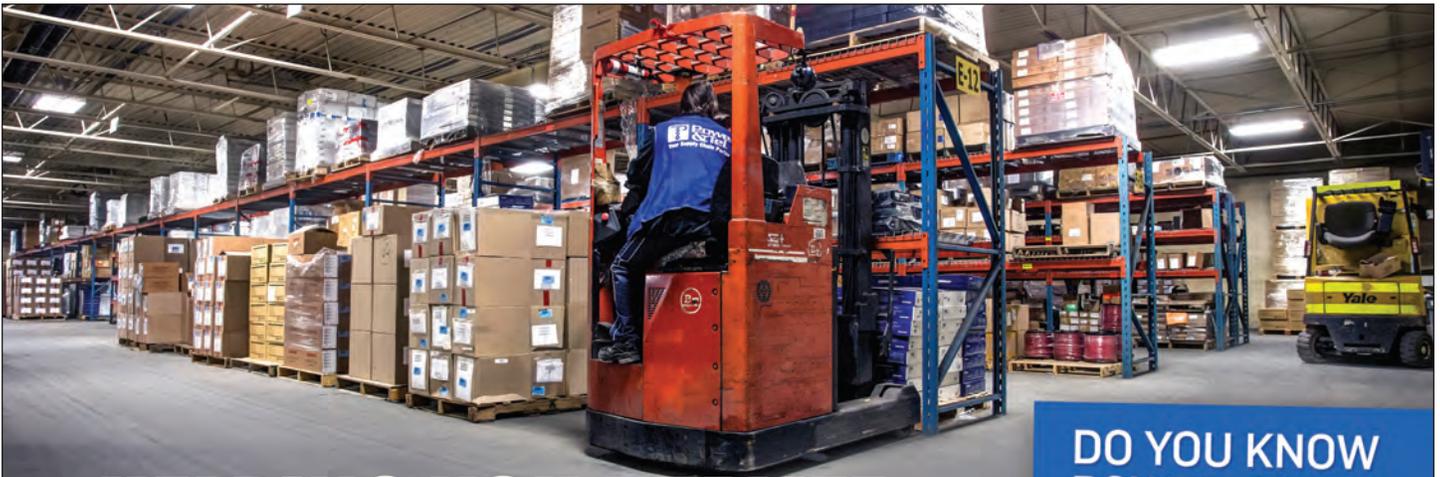
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Another Committee? Yes, If It's a Safety Committee



Many times a committee of peers can achieve great things that benefit the company as a whole. A safety committee is a perfect example. The safety committee acts as a conduit for delivering safety information to the entire workforce; provides a channel for feedback and suggestions from workers; and helps prevent repeat accidents. While the ultimate goal is promoting workplace safety, the fact that it helps keep your workers' compensation costs down by either mitigating or preventing losses is a plus.

Safety State-to-State

The following states have some specific requirements for safety committees: Alaska, California, Hawaii, Michigan, Minnesota, Montana, Nebraska, Nevada, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, Tennessee, Vermont, Virginia, Washington and West Virginia. While this does not mean that every company in those states is required to have a safety committee, it does mean that you have a responsibility to know if your company meets the guidelines of this requirement. For example, in Tennessee, if your workers' compensation experience modification factor (mod) is over 1.2, you must have a committee of not fewer than two employees if you have fewer than 20, or not fewer than four employees if your company has more than 20 employees. This rule also applies in North Carolina if you have more than 11 employees and a mod of 1.5. In Washington, if you have 11 or more employees on the same shift at the same location, you must have a safety committee. In Minnesota, if you have more than 25 employees, you must have a joint labor-management safety committee.

The most productive committees include participants from throughout the company

How to Stay Safe

So, how do you go about setting up a safety committee? In reality, the fundamental key to making the safety committee a success is having management's commitment and encouragement. Then, to work most effectively, the committee must have the correct members. The most productive committees include participants from throughout the company or the specific job site, with members representing levels from hourly workers to upper management. Companies or worksites with fewer than 100 workers can

generally obtain the best results from committees of no more than seven members. Even when worksites become much larger, it's good to keep the committee at a manageable size to ensure that all of the participants feel that they are making contributions.

While it's possible to select the committee members through some kind of democratic process, such an election should reflect various departments or operations of the company. The most effective committees are usually those for which participants are carefully selected. The goal is not to ensure that the owner's or manager's viewpoint dominates the discussion. Instead, it's to make sure the people sitting on the committee will be good representatives who will be respected by the workers.

If your state does not dictate how long safety committee members should serve, it's best to have some rotation to get new ideas—but it's not good to start with a totally new committee each year. The committee should have a chairperson, a secretary to take the minutes (OSHA could ask for them, or they could be subpoenaed) and a communications person to disseminate the information to company employees either through a newsletter or an intranet.

Generally, keeping meetings to one hour will keep them productive. If possible, committees should meet monthly or as conditions dictate. The committee

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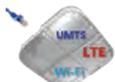
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should have a budget and a process for expenditure for items such as training, safety equipment or safety incentives/awards if they decide to offer those to the employees.

Some of the basic functions of the safety committee are:

- > Create, carry out and watch over safety-specific programs and procedures.
- > Hold or arrange monthly safety meetings.

- > Conduct workplace safety inspections.
- > Review near misses, accidents and losses for any trends and/or training needs to prevent them in the future (this is not a place to punish employees who have had accidents but to establish corrective behavior or new rules to prevent them in the future).
- > Make safety recommendations to management.

The safety committee should report

both good news and bad (keeping specific employee names private from the general staff) to management and to the staff.

Having a safety committee will not always prevent accidents/losses. So, if accidents happen, review them and look for ways to prevent them from happening in the future. If there are fewer accidents, improved safety and reduced workers' compensation claims, thank the committee and the staff for their contributions.

Whether it is a requirement or just a best business practice, establishing a meaningful safety committee at your company is the right thing to do to continuously promote safety as a core value. If you'd like some specific information on setting up a safety committee, email me at the address below.

Marilyn Blake is chief operating officer of Telcom Insurance Group. Contact her at mab@telcominsgrp.com.

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Bill Squires, Chief Executive Officer, Blackfoot Telecommunications Group



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Solar and Wind Power Rural Alaska Network

By Tabitha Gregory, Copper Valley Chief Customer Relations Officer

In the Copper Valley Wireless (CVW; Valdez, Alaska) service area, 9,300 people live in a 15,000-square-mile slice of Alaska's mountains, vast river valleys and rugged coastline. Here, winter comes early and stays late. Winds howl through mountain passes, 350 inches of snow falls by spring and temperatures drop to 50-below. During the darkest part of the year, the sun graces the land for a mere six hours each day.

Within this environment, CVW built and operates a state-of-the-art wireless communications network comprised of 39 cell sites. Some of the sites are situated along highways and roads, while other sites are located on islands or ridge tops from which the most extensive coverage can be achieved. The costs of operating these sites are extraordinarily high, and much of that cost is driven by fuel and fuel delivery.

To help the company achieve its service goals and to control maintenance and fuel costs, CVW has developed a successful alternative energy program. Chris Mishmash, CVW's wireless & facilities manager, leads the company's alternative energy program. "People aren't surprised that we have enough wind to  38



Blackfoot Pledges \$500,000 to Missoula College

By Tennille Shields, NTCA-The Rural Broadband Association Senior Content Specialist

Once again proving its commitment to the local community, the Blackfoot Telecommunications Group (Missoula, Mont.) announced in August 2014 a pledge of \$500,000 to help fund construction of and provide cutting-edge technology to a new Missoula College campus. The pledge is the largest-ever private donation to the college, and it will help to address a \$3 million match requirement set by the Montana Legislature in 2013 for the construction of a new campus.

"The future health and prosperity of Montanans depend on access to high-quality, cost-effective education and technology," said Bill Squires, chief executive officer of Blackfoot. "We are proud to support the expansion of higher education in Montana through this donation to Missoula College."

The two-year Missoula College is part of the University of Montana education system. Some students earn two-year associate degrees and certificates from the college, while others continue on to the university to obtain a four-year or advanced degree. The cash and in-kind  39

Solar and Wind Power Copper Valley

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The Copper Valley Boswell Bay site features solar and wind power sources.

generate energy,” he said, “but they are surprised that we get enough sunshine to produce solar power.”

An Alternative Energy Source

The company's alternative energy portfolio includes solar arrays at nine sites, ranging in size from 1 kW to 15 kW, and one wind generator. The company plans to add solar power to an additional site this year, and is collecting wind data at another site with an eye toward placing a wind generator there if feasible.

Energy demand is on the rise as technology changes and customer use increases. In 2013 and 2014, when the company upgraded 24 wireless sites to 4G LTE—which requires much more bandwidth than 3G—power consumption jumped. “These kinds of increased energy requirements are unavoidable, but alternative power sources have helped keep a lid on costs,” Mishmash said.

In 2014, CVW's alternative energy program achieved two significant advancements. In July, the company turned on its first commercial-grade wind generator at its remote Boswell Bay site near the fishing community of Cordova. The 7.5 kW generator is fully operational and is expected to supply up to 43% of that site's annual energy requirements.

Solar panels at the Boswell site bring the total energy from alternative sources up to nearly 70%, depending on time of year and weather conditions. The system, which consists of a 100-foot tower and a turbine with a 23-inch diameter rotor,

needs a minimum of 10 mph wind speed to create power. Even when it is calm on the ground at Boswell, wind is often adequate at the height of the rotor, Mishmash noted. The project is expected to pay for itself in less than six years.

Also in 2014, Copper Valley Wireless received a \$47,325 grant awarded by the U.S. Department of Agriculture to support installation of 45 solar panels at another remote mountain cell site. The new panels, which supplement an existing array, will produce nearly 10,000 kilowatt-hours per year, saving the company many thousands of dollars in fuel expenses. Along with existing panels, the array will supply approximately 29% of the site's total power needs.

In addition to controlling fuel expenses, CVW has benefitted from the low maintenance associated with solar panels. “Maintaining the solar arrays is almost negligible,” Mishmash said. “Once in place, they will produce energy for decades with little or no maintenance. There are no moving parts.”

Mishmash noted that wind turbines, which in contrast have many moving parts, require regular maintenance, inspection and monitoring, much like diesel or propane generators. However, the company still sees the payoff on wind in the form of reduced energy costs.

Tips for Success

For companies considering using solar or wind, Mishmash offered the following tips:

- > Get to know your energy source. Collect

accurate wind data for a minimum of one year. For solar, use tools to help forecast access to sun and predict annual energy production.

- > Site equipment correctly. Eliminate or minimize shading on solar panels and use an appropriately tall tower to get wind turbines out of turbulence.
- > Size the alternative source appropriately compared with your load, and install enough batteries to store produced energy so that it can last to the next sunny or windy day.
- > Buy equipment from reputable manufacturers.
- > Hire a quality installer if you are not installing the system yourself. Find a North American

Board of Certified Energy Practitioners certified installer through www.nabcep.org.

Mishmash also noted that installing alternative systems at grid-connected facilities also may be wise investments and can help offset rising energy costs for companies over the long term.

Copper Valley Wireless sees its alternative energy program as an integral part of its ability to provide wireless services to customers in rural Alaska now and into the future. Controlling costs and reducing fossil fuel emissions into the environment add up to good business practice for the company. [E](#)

Blackfoot

from page 37

gift will help to broaden opportunities and enrich educational resources for students at the new Missoula College campus, slated to open in mid-2017.

Fulfilling a Need

A few years ago, the Montana Legislature pledged \$27 million to \$30 million for the campus, with the caveat that the university secure \$3 million in private funding. The Blackfoot board stepped right in to provide the single-largest donation that the college has received to date, said Joel Block, Blackfoot vice president customer relations, product management & marketing.

The growth in the college has precipitated the need for a new campus, he explained. While the numbers ebb and flow, the campus has approximately 2,000 students.

"The donation made sense strategically," Block said. "Blackfoot has its roots as a cooperative. Giving back to the community is in our DNA. This is really just a part of that lifelong commitment.

"The college will bring high-quality jobs and

accessible education," he said. "Who can ask for anything better than that?"

Royce Engstrom, president of the University of Montana, stated, "Given the increasing importance of communications technologies, including broadband in virtually every professional field, it is fitting that Blackfoot Telecommunications is leading the private-sector charge to give our outstanding two-year college a new home."

When completed, the new Missoula College building will house four academic departments: Applied Arts and Sciences; Applied Computing and Electronics; Business Technology, which includes the Culinary Program; and Health Professions.

The donation is the latest in a long-term commitment from Blackfoot to support education, economic development and job creation. In 2012, a gift from Blackfoot established the Mandeville Endowed Professorship in Accounting at Carroll College in Helena. Each year, the Blackfoot Scholarship Fund provides tens of thousands of dollars in individual scholarships to outstanding high-school students and post-secondary students. [E](#)

SHARE YOUR STORY

NTCA-The Rural Broadband Association seeks to spotlight the efforts of member companies across the country. Exchange is a great place to share your company's success stories on economic development, community outreach, technology rollouts, and state and regional collaborative projects. To share your story, contact Tennille Shields, NTCA senior content specialist, at 703-351-2097 or tshields@ntca.org.



NineStar Hosts Israeli Delegation



It's not every day that an international delegation travels to rural Indiana to see fiber deployment in action, but such was the case last fall when NTCA-The Rural Broadband Association member NineStar Connect (Greenfield, Ind.) hosted a group from Israel.

At the suggestion of a fiber manufacturer that is familiar with NineStar's work, representatives from the state-owned Israel Electric Corp. and the Israel Broadband Co. traveled to the United States to visit several companies across the country that are in various stages of fiber deployment.

Israel is in the preliminary stages of rolling out a national fiber-optic project—the first of its kind in the country. The vendor suggested the group meet with NineStar, given its unique background.

The telco was formed a few years ago after the local cooperative and electric cooperative merged. Through this arrangement, the company offers fiber optics, communications and electric utilities.

The group spent a day at NineStar, touring the telco's service territory to witness firsthand the company's various fiber construction projects and to learn more about the technology in use. [E](#)



The 7,000-Mile Connection

Broadband transcends geographic barriers and connects loved ones who are thousands of miles away. Because of Hartelco (Hartington, Neb.), an Air Force major stationed in Qatar was able to listen in on a live audio broadcast of his daughter's high-school basketball game in rural Nebraska. Here is that story, as submitted to Exchange by Mike Becker, marketing and regulatory manager of Hartelco.

On the first Friday night in December 2014, our local high school hosted a boy's and girl's basketball game doubleheader. Hartelco has been Web streaming the audio of all home games live over the Internet since our initial phase of broadband deployment seven years ago. We typically will give the visiting school advanced notice of the audio Web stream in case they have fans who can't attend in person.

This game's audio was Web streamed live over the Internet just like any other game. However, after the girl's game concluded, a member of the visiting team came up to our broadcast table and asked if she could send a special message to her dad, an Air Force major stationed overseas in Qatar. Her mom had let the dad know of our live Web streaming audio coverage of the game, and he was listening.

We quickly put one of our announcer's headsets on the young player. She thanked her dad for being able to listen to their first win of the season, told him how proud she was of him, and

also said that she couldn't wait for him to get back. Then she signed off with "love you!"

Later that night, we received an email from her dad stationed in Qatar. He thanked us for making it possible to receive the message from his daughter and listen to the game from literally "7,000 miles away." Little did he know that it was all made possible because of broadband.

We shared the story of the basketball player reaching out to her dad on our Hartelco Facebook page. Normally, we might get 150 views. This post had 16 shares, and reached over 7,700 people.

And of course, everyone could listen to the young visiting basketball player speaking words of encouragement to her dad serving in the military overseas—an inspiration to all during the holiday season.

Hartelco was very happy to be able to help both the daughter and dad connect with each other—made possible by the broadband infrastructure we deployed over the past few years. [E](#)



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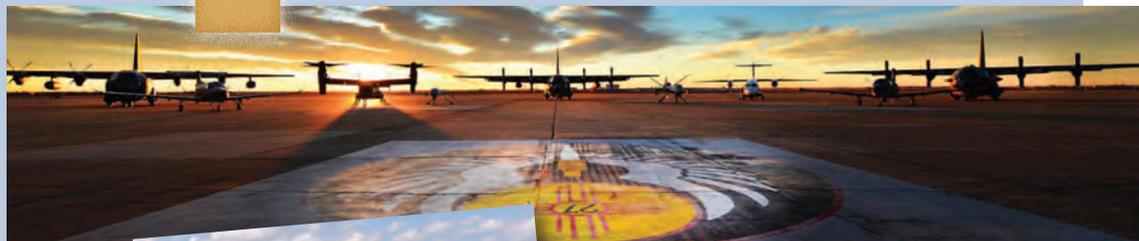
covers 3,400 square miles of buried cable. Today we provide local and Internet services to over 5,000 customers, inclusive of 2,682 access lines.

History

Yucca Telecom has proudly been a part of eastern New Mexico for over 60 years, delivering quality communications services since 1951. Our heritage is deeply rooted, and we take pride in taking an active role in the success of our community. Yucca Telecom is a locally owned company with friendly customer service, and is dedicated to making sure our customers have access to the right technology for their home or business.

Customer Profile

Yucca Telecom's customer base in the rural areas is declining because of an aging population. We have seen a trend of the older population migrating closer to town. Recognizing the decline in the rural communities, we are now focusing on military personnel along with educational and business profiles. Cannon Air Force Base and Eastern New Mexico University have brought into our community a very diverse cultural population along with a more advanced knowledge of technology. Anglo and Hispanic cultures dominate our areas.



Technology

Our business began with an overhead copper plant with party lines and then advanced to buried copper utilizing a digital switch. In 1995, we installed fiber optic cable to the rural schools we serve. Currently we are replacing the buried copper plant with fiber optic cable to extend the availability of better broadband services to our subscribers. Yucca

Telecom is unique in that we are providing speeds as fast as 1 gigabit to our subscribers in the city limits of Portales. Customers have defined our high-speed Internet as "smokin' hot Internet."

We have jumped many hurdles over the past year, and our next leap is offering television services

where fiber is available. Our goal is to provide efficiencies in technology consistent with the urban areas while living in a rural area.

Workforce

Yucca Telecom consists of a 37-member team, all hardworking and dedicated. We take pride in excellent service, integrity and community involvement. We recognize that our employees are vital to this organization and the achievement of our mission. Each member of our team is committed to maintaining the progressive growth and success of this organization.

NTCA
Member Since
1979

General
Manager
Cecile
Archibeque

