I’ll share something that NRTC members might not know. I own a farm. About sixteen years ago I bought a place in central Virginia a couple hour’s drive away from NRTC offices in Herndon. And I don’t have access to landline broadband there. The national telco provider that serves my farm says this lack of data capacity is a “temporary condition.” Sixteen years later, I’m still waiting. Thankfully, however, I’m still able to get broadband access through NRTC’s satellite broadband solution!

So, I have first-hand experience with the frustrations many people in rural America have. Chances are those who live in a territory served by a telephone cooperative or an independent rural telco are fortunate to have an internet provider who understands the need for broadband connectivity. Electric co-ops in many parts of the country are moving to fill the broadband gap in their communities, which over ninety-five percent of the time are not being served well by nationwide telephone company providers. One thing our telephone and electric members agree on is that bringing broadband to rural communities is vital for economic growth in rural America. I am pleased that many such utilities are finding ways to work together in this important endeavor.

One of NRTC’s most exciting projects in 2018 was with Butler Electric Cooperative in Kansas. You’ll read more about them in this report. They have used an affordable combination of fiber backbone and fixed wireless technologies to deliver speeds much faster than established ISPs operating in the area. Ninety percent of the homes passed by the Butler wireless network can obtain downlink speeds of 100 Mbps, and the lowest speed offered is still a respectable 25 Mbps.

What does that kind of speed mean to a rural home or business? Suppose you want to download the new Apple operating system, macOS Sierra. That takes about eight minutes at 100 Mbps. But if you tried to download it at 2 Mbps, the speed offered by many nationwide telco providers, you can plan on eight hours for the data transfer to complete.

Speed and capacity isn’t important just for consumer applications—our electric members are seeing substantially greater needs for throughput in their entire network, too. Automated Metering Infrastructure (AMI)
generates ten thousand times the data today than it did just a few years ago. Distribution Automation (DA), Demand Response (DR), Distributed Energy Resources (DER), and other community needs such as street light automation, sound sensors, and water and gas infrastructure lead to geometrically higher data requirements, and I’m pleased that our latest generation AMI solution delivers exactly such needed capacity.

NRTC’s Gen 5 AMI network solution is a high-capacity, low-latency outdoor mesh network. You might recognize mesh networks if you use office or hotel WiFi, for example, or WiFi in your home from vendors like Eero, Orbi, or Google. NRTC deploys networks that deliver on average four to six times the speeds of our nearest AMI competitors—and perhaps more than fifty times the per-meter throughput of other AMI providers. The AMI equivalent of downloading the latest Apple OS might be delivering meter firmware updates—our Gen 5 solution can deliver updates to 50,000 end points in eight hours—a competitor’s system could take weeks or months.

Serving our members who serve their communities with broadband is equally important to NRTC. Our NeoNova operation acquired SecurityCoverage earlier this year and, combined, we support nearly 2.3 million end users at more than 400 members. Each day we deliver six million pieces of email; each day, we prevent or segregate the delivery of 30 million spam or junk emails! And, our wireless operation Telispire helps members compete against cable companies by matching their nationwide wireless offerings—and combining wireless with voice, video, and data services.

I am grateful that NRTC is a cooperative, and as part of its mission, it cooperates with other cooperatives. One prime example was our work last year with NRECA and NTCA to lobby the FCC for a cooperative-friendly regulatory structure for the upcoming CBRS (Citizens Band Radio Service) auction. And together, we succeeded; all CBRS licenses will be auctioned by county, giving our rural members the chance to acquire spectrum only where they need it.

Providing broadband to rural America. Helping electric members modernize their networks. Supporting members with back-office solutions so they in turn can provide broadband to their end user members. And last but not least, returning capital to members in a balanced way that helps both their growth and our opportunities. This is today’s NRTC. And this is our mission.

Thank you for your patronage of NRTC in 2018.

Sincerely,

Tim Bryan
Chief Executive Officer
2018 NRTC BOARD OF DIRECTORS

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“The only thing that is constant is change.”

You’ve heard that phrase many times. It could be the motto for rural utilities. Our industries (both electric and telco), the services we provide, the competition we face, even the demands our consumers place on us is always evolving.

It requires us to be nimble, to innovate and to be creative in how we approach opportunities and solve problems.

The more I think about this dynamic, the more I realize the importance of having trusted partners to help. Not only is NRTC one of those partners, but their ability to bring together electrics and telcos is extremely valuable and becomes more impactful as our industries evolve.

Whether it be providing scale, exploring new business (revenue) opportunities, or tackling big challenges like the ones Tim mentioned in his CEO letter, we benefit from working together. NRTC believes that and continues to work to bring solutions to both electric and telco members that hold real promise.

In the 2017 annual report, I focused on changes NRTC was undergoing – expanding and refining its solutions portfolio as it strives to be members’ trusted technology partner. This past year, NRTC took steps to further refine its message by focusing on the solutions it provides rather than the companies that provide them. As with other elements of its brand evolution, that effort had members in mind. By more clearly telling their story, NRTC can better serve you.

I believe NRTC lived that mission in 2018—as you’ll see through the pages of this annual report. As we have done in previous years, this year’s report outlines several NRTC solutions through the eyes of our members; indeed, NRTC’s mission is to put member interests ahead of its own interests, always!

This letter is my last act as chairman. It has been a privilege to work with cooperative leaders from both industries to ensure that NRTC is doing all it can to help you manage the changing technology landscape for the benefit of your organization and for the communities you’re so proud to serve.

Jeff Wilson
Chairman, NRTC Board of Directors
The need in South Central Kansas back in 2017 was the same need that many rural areas have. There was high demand for home and commercial broadband. Butler Rural Electric Cooperative did a member survey that found 92 percent wanted the co-op to provide fast internet service.
“We know we have a lot of areas where customers would like to build houses and move there, but once they find out that broadband is not available, they look elsewhere. It’s the same with businesses,” said Butler CEO and General Manager Dale Short.

Butler, working with NRTC’s broadband team, spent 2018 building a broadband solution to fit its members’ needs while ensuring Butler’s own long-term financial requirements. The result was “Velocity,” a fiber-fed, fixed wireless broadband service that can deliver 100 Mbps downlink speeds to ninety percent of the homes passed by the network; even the most basic tier delivers 25 Mbps of downlink speed. Butler crews were installing about 100 homes a week as Velocity went into service in January 2019.

Early in the process, NRTC conducted a feasibility study to determine whether Butler could deploy a cost-effective fiber-to-the-home service in its area. The conclusion: the population density would not support a full FTTH build. Better results followed after NRTC conducted the study again based on a hybrid network of fiber backbone, some fiber to the home, and a fixed wireless last-mile solution for other service territories.

The all-important factor was to find the right wireless technology. Some past rural fixed wireless projects have been disappointments because they relied on old technologies and insufficient spectrum capacity. “There’s one wireless competitor in our area that I know of, and their offering is 15 [Mbps] down for $255 a month,” Short said.

Butler installed 90 tower sites in its service area, enhancing the speed and reliability of their service. And, Butler’s fiber backbone was constructed with tomorrow in mind; Butler has plenty of capacity to expand into greater fiber to the home or fixed wireless access, all on the cooperative’s own budget and preferred upgrade pace.

Working with NRTC gave Butler access to a wide range of marketing and network management solutions that it can use to attract new broadband customers and stay in touch with current subscribers. The broadband package includes voice service and over-the-top video with national and local channels. Butler also relies on NRTC’s managed services to help them deliver internet services and handle essential back-office tasks.

Providing broadband “feels like we are meeting our mission,” Short said. “Our mission is to provide service, economical and reliable to our members.” With wise use of technology, Butler is meeting its members’ needs.
OPERATIONS AND MARKETING TOOLS AID TELEPHONE CO-OP’S RELATIONSHIP WITH CUSTOMERS

Operating an Internet Service Provider (ISP) is a complicated business. Even after fiber optic lines and other broadband plant have been installed, the business demands the continuing attention of a host of technical, administrative and operations personnel.
One telephone cooperative, Taylor Telecom in Merkel, TX, knows that well. That's why they turned to NRTC's Broadband Managed Services division for help managing their ongoing business needs—specifically, assistance with troubleshooting equipment issues, and help creating marketing and social media collateral.

“We couldn’t see what was going on with the modem,” said Gail Strickland, Taylor’s Dispatch Operations Representative. “We could only see the connection, and we'd have to do the troubleshooting blindly. We'd have to set up modems and equipment in the office and do a truckroll.”

With a service area covering more than 2,000 square miles of West-Central Texas, diagnosing problems or updating equipment firmware meant sending out a technician—a costly and time-intensive proposition.

But after launching modem provisioning and synchronization services from NRTC, Strickland and Taylor’s technicians can access modems remotely to look up account settings and configuration properties, update firmware and perform troubleshooting procedures. When truckrolls do become necessary, technicians still find value in the service, as it can help them diagnose equipment problems before they visit a subscriber’s home.

“The installers use it too,” Strickland said. “We never did firmware updates remotely. Now we do a lot of that from the office.”

Beyond managing the service and keeping customers online, running a successful business involves creating an on-going relationship with subscribers and keeping them safe online. That’s why Taylor takes advantage of NRTC’s marketing and social media services.

“[NRTC] offers free brochures and informational handouts, which we then send out to customers,” said Amanda Hofer, Taylor’s Controller. “We’ve also started using their e-newsletters. We can include industry-related information, as well as information related specifically to [Taylor]. It’s been very good to use.”

In addition, NRTC provides regular posts for Taylor’s blog, which cover a range of topics, from tips to avoid phishing schemes and help connecting devices to Wi-Fi. Taylor also posts educational “whiteboard” videos, which have proven popular, and have helped the cooperative raise its profile online.

“When we initially posted them on Facebook, we noticed there were more likes and shares. We have had an increase [in followers and engagement], and more pushes,” said Hofer. “It’s been very helpful. It helps us have a cohesive brand and message.”
It started as an experimental alternative energy project for the U.S. Army, but before its official ribbon cutting in late 2018, Plumas-Sierra Rural Electric Cooperative solar generation facility in Herlong, CA, was already doing a vital service for the cooperative’s members. NRTC and its solar/energy storage partner, ENGIE, were important project partners.
It started as an experimental alternative energy project for the U.S. Army, but before its official ribbon cutting in late 2018, Plumas-Sierra Rural Electric Cooperative’s solar generation facility in Herlong, CA, was already doing a vital service for the cooperative’s members.

NRTC and its solar/energy storage partner, ENGIE, were important project partners.

The Army chose Plumas-Sierra to build the 2.5-megawatt solar generation facility at its Sierra Army Depot as part of a Department of Defense/Department of Energy joint project called “Net Zero Energy.” The government says the project’s goal is “to reduce energy demand and increase use of renewable energy on DoD installations.”

Former NRTC board member Bob Marshall, general manager of Plumas-Sierra REC, led a party of several dignitaries at a May 24 ground-breaking ceremony. Construction moved smoothly in the following months. “Plumas is happy, the Army is happy, and we are on schedule,” senior project manager, ENGIE’s Brandon Mathis, said at the midway point of construction in August. The project went online in late October.

The ribbon cutting was set for Nov. 13, but just days before there was some unexpected drama. The wild fires that devastated much of California in 2018 cut Plumas-Sierra’s main feeder line from its generator, Pacific Gas & Electric. Secondary feeders were available, but would not be enough to serve the peak needs of the co-op’s members. Power from the new solar facility made up for the main feeder loss for several days.

“Without this system, PSREC members would have faced rolling blackouts in their homes and businesses as demand was cut to meet supply,” said Brad Seibert, NRTC’s VP, Next-Generation Energy.

“We are on Day 5 of the campfire. Plumas-Sierra has been without its main power supply for 130 hours,” Marshall said during his ribbon-cutting speech. “And it’s a little freaky every morning… watching the voltage as it creeps up. We’re so happy to say that the moment the sun has hit these panels, the voltage has stabilized. [The solar facility] has already contributed to system stability and system support, which is awesome.”

Going forward, Plumas-Sierra is considering other future energy projects, including a possible 500-kilowatt system adjacent to the army depot. It also is planning to work with NRTC and ENGIE to build energy storage systems to go with the solar facilities.

“Plumas-Sierra is not the biggest utility nor the richest,” Marshall said. “What we are is persistent. What we are is relentless. We’re pretty proud of that.”
For many electric cooperatives, the decision to deploy automated metering infrastructure (AMI) is a practical necessity. A powerline carrier-based meter reading system has reached the end of its life cycle. That was the case for Cumberland Valley Electric in Kentucky, as it began seeking an AMI system.
NRTC’s Gen 5 solution (originally Silver Spring Networks, now Itron) is the technology that stood out. The Gen 5 approach features wireless mesh networking and an open architecture to support a flexible range of deployment options. Mark Abner, Cumberland’s engineering manager, could list several reasons for choosing NRTC, including cost and the “network-first” approach that focuses on communications first.

“We liked the meter agnosticism—the ability to choose the meter we wanted to use,” Abner said. “The security of the system, we think, is probably the best in class. We like the idea that it is based on IPv6 standards—things that are known to IP people. It’s not a proprietary system where you can’t learn how it works.”

Construction began in August 2018 and is progressing on schedule. Over the summer of 2019, Cumberland Valley is in the early stages of rolling out an eventual 24,000 meters. “If all goes well, we’ll be changing mountains of meters this year,” Abner said. A 27-access point mesh network will connect them over rolling Kentucky terrain.

“Terrain was a consideration, at least initially,” Abner said. “Our terrain ranges from rolling to very rough with large mountains.” But Cumberland Valley observed an earlier Gen 5 installation at another NRTC members’ site and picked up ideas on how to maximize coverage.

That was one area where NRTC support staff offered an important assist. Nathan Holland, NRTC’s director, Grid Intelligence, who has been the project manager for the Cumberland Valley job, praised NRTC AMI Project Engineer Tim Smith, who did much of the work in laying out the cooperative’s wireless facilities.

“I think it is fair to say that when the project is done, Cumberland Valley will be a generation ahead of typical rural cooperative AMI deployments,” Holland said. Once the meters are in place, the cooperative plans to explore using AMI data for voltage management systems, SCADA systems, and other smart grid applications.

“They have taken care of us well,” Abner said of his working relationship with NRTC. “We have weekly calls with our NRTC project manager and Itron project manager. I would say it’s gone well so far.”
Like many telcos around the country, Pulaski White Rural Telephone Cooperative in Buffalo, IN, has been rolling out fiber-to-the-home (FTTH) in both new and existing markets throughout its region. As part of those efforts, the Cooperative, which operates under the name LightStream, purchased a cable television provider in 2014. Finding itself in an entirely new market, it tried to answer a common question: what to do about video?
“For the first time in company history, we were in the video business,” said Ashlee Siegle, Operations Manager at LightStream. “It was uncharted territory that came with a lot of growing pains. It was a completely different industry with different challenges and opportunities.”

The challenges ranged from the simple—like understanding the basics of the industry—to the complex—ensuring regulatory compliance and negotiating local retransmission consent rights. To navigate those challenges, LightStream turned to Frank Scotello, Vice President of Video Services Programming in NRTC’s Broadband Deployment division.

“Our biggest challenge is, like most other rural telcos, growing our customer base while offering world-class services at a competitive price,” said Siegle. “Building a competitive yet cost-effective channel lineup from the ground-up was an entirely new experience, and we really weren’t equipped to do that on our own.”

Scotello leveraged LightStream’s existing programming rights from their acquired cable company and provided a comprehensive audit of the telco’s offering. The audit offered recommendations to make their pricing more competitive with other players in the market.

“He reviewed our existing lineups to ensure that we were in compliance and offered strategies to reduce costs.” Siegle said. “His aptitude and connections in the industry helped us to move forward efficiently, and his understanding of contracts and video networks and services enabled us to deliver an incredibly strategic and creative channel lineup.”

NRTC’s work with telephone cooperatives is about more than maximizing efficiencies and reducing costs. NRTC prides itself not just on providing a service, but on forging working relationships with its members, and ensuring on-going member success.

“Working with Frank has been an incredibly positive experience,” Siegle said. “His deep understanding of the video industry has been priceless to us.”

For other telcos facing the video dilemma, Siegle offered some advice.

“Whether you’re considering entering the market, changing your offering, or getting out of video, I highly recommend [NRTC] to assist you. They are equipped to identify opportunities and challenges and will be able to offer sound advice to make the best decision for your company and customers.”
DISCOVER THE BENEFITS OF MEMBERSHIP
As a member of NRTC, you will join more than 1,500 other rural electric and telephone utilities that have a stake in
development of products and services that can help you grow your business, get closer to your customers and build revenue.
NRTC proudly serves the advanced technology needs of its members.

MEMBER OWNED AND CONTROLLED
Our Board of Directors is comprised of representatives from the national rural electric and telephone industries, the CEO of
the National Rural Electric Cooperative Association (NRECA), the Governor and CEO of the National Rural Utilities Cooperative
Finance Corporation (CFC), and the CEO of NTCA, The Rural Broadband Association.

CAPITAL CREDIT RIGHTS
All members and affiliates are eligible for payment of capital credit refunds based on the volume of business each patron
conducts with NRTC during the fiscal year.

FOR MORE INFORMATION
To learn more about NRTC membership or our products and services, please contact NRTC at (866) 672-6782.