



Fiber Optics

ANNUAL REPORT 2014

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A WELL-DESIGNED SPACE THAT BRINGS PEOPLE TOGETHER, IN ONE PLACE.

Because this is the first time that so many systems have been housed together, the planning team wanted to take full advantage of having so many smart employees working side by side.

So the space is designed to encourage groups of people from different departments to interact, to share ideas and thoughts as often as possible. To gather around the proverbial water cooler, stop and talk in the hallways. Even to eat lunch together on an enclosed, secure patio.

As our employees downtown and in other locations have discovered, when bright EPB people are close together on a daily basis, more knowledge sharing takes place. When one part of our organization explores new ideas, or learns valuable lessons – others can benefit.

Working alongside each other creates better communication, better cohesion, and true innovation – where the ideas from one area of the system are applied to a different area, in new ways. Just as importantly, the close proximity of the teams enables each to respond to complex issues, faster. Customers who need an immediate field technician dispatched benefit from the interaction between electrical engineers, communications technicians, and the dispatchers talking to crews in the field.

Among the different divisions, EPB employees work more than 1,500 orders every day. In a storm situation or other emergency, that number can triple, in the blink of an eye. But now, like never before, we will be able to work all of our orders better, more efficiently, and more intelligently – together.

In the photo: Angela Taylor, Manager of Resource Planning, manages field and other resources from the new control center.

We work 1,500 orders,
every day.



Our residential gig customers have 1000 Mbps, for only \$69.99/month

PICKING UP SPEED

For four years, we have been the largest American city to have a community-wide fiber network. Now, we've made the fastest Internet even more accessible.

We celebrated the fourth anniversary of EPB Fiber Optics with a gift to our community: an incredible increase in Internet speed, coupled with a decrease in price. Because when bandwidth is not an issue, new doors open for innovation and opportunity, in every corner of our community.

As a surprise to our customers, we automatically increased their speed – whether residential or business customers, whether schools or community organizations. In September 2013, our slowest speed (if it can be called 'slow'), became 100 Mbps, while average download speed in the country remains around 7 Mbps.

The thousands of customers who had already signed up for our 100 Mbps package were upgraded to a full gig, 1000 Mbps, giving Chattanooga the country's highest concentration of gig users. Homes, tech startups, communications companies, and corporate leaders suddenly found themselves with a gig of bandwidth – and have already begun to explore what it means to combine EPB's legendary quality of service with unprecedented symmetrical upload and download speeds.

What prompted such a move? The goal goes deeper than to help position our fiber business for continued success, it is also to help our community do the same. Creating new opportunities and sustainable success for people in urban, suburban, and rural settings throughout our entire service area.

In the past year, municipal utilities, government officials, and private corporations have visited Chattanooga from Japan, Australia, New Zealand, Israel, Ireland and Brazil, as well as from around the country. In each situation, they are looking to Chattanooga as a model for how to bring the benefits of fiber to both the electric system and communications.

Around the world, Chattanooga is getting a reputation – when we talk about enhancing quality of life in our community, we mean it.

In the photo: Mike Reid, a Service Technician, helped change out thousands of pieces of equipment in preparation for the speed increase.

58,000 residential & 5,200 business EPB
Fiber Optics customers



WE WANT TO INCREASE THE
ENTERTAINMENT, EDUCATIONAL,
AND BUSINESS OPPORTUNITIES
FOR PEOPLE IN OUR COMMUNITY.

Leading up to the day we upgraded, a number of our departments and divisions were working in tandem, under the radar. For the residential upgrades, our field services teams replaced equipment at homes needing new equipment to deliver a gig. The original units that we installed had a capability of up to 400 Mbps, but in the time since, a next generation version has come out with two gig ports inside.

The commercial side was more complex. A number of our longest-standing business customers were on our Wave 7 legacy network, from when we first installed fiber optics in the downtown area. Leading up to the speed increase, we transitioned business customers to our new network. Offering the highest bandwidth available, private network capabilities, and more – all backed by the customer service that local companies have come to expect from EPB.

Meanwhile, our Marketing Group was making changes to the website and marketing messages, Provisioning was making changes to templates, and all of the billing was being changed. All working together, all under the radar – so when the day came, we could transition everything overnight, so there would be no negative impact on customers' service. So when they logged on that morning, the only surprise they had was an exponentially faster connection.

100 Mbps is our “slowest” Internet speed
(7 Mbps is the national average)



MANY HANDS MAKE THE LIGHTS WORK

When a transformer failed at a retirement community, our crews went into action. Even though the equipment wasn't our responsibility.

Most transformers on our electric system are EPB's responsibility, part of the equipment owned by our company. But that isn't always the case, and when a customer-owned transformer failed at a retirement community, we responded. With night approaching fast, we wanted to work faster, to make sure that power was restored for every resident.

Alexian Village is a retirement community overlooking the spectacular Tennessee River canyon, from high atop Signal Mountain – and one of the few EPB customers who own all of the power equipment on their property, from the poles to the equipment outside individual apartments and homes.

But when a transformer failed, and no company in town had a replacement, we did not want the residents to have to wait.

Our Fiber Optics division found out about the situation first, and alerted Operations. We dispatched a crew to restore service as quickly as possible – and when they arrived, the residents were in the yard, watching and waiting. When power came back on, they applauded the linemen for their efforts!

But the story doesn't end there.


BECAUSE DOING THE RIGHT THING FOR OUR CUSTOMERS OFTEN ENDS UP AS THE RIGHT CHOICE FOR OUR COMPANY.

Thanks to this outstanding example of customer service, the management team at Alexian Village praised EPB to their parent company. Our teams went “above and beyond,” they said, in responding to the outage.

This level of service, they argued, was indicative of EPB – not only how we treat customers, but our character, what kind of company we are. Why would they not want to work with such a company, at every opportunity?

The parent company agreed! And so, within weeks, Alexian Village agreed to transition the video, telephone and Internet service for the entire campus to EPB Fiber Optics.

In the photo: Jeff Chastain led the crew that fixed Alexian Village's blown transformer.



\$24 million
support from fiber to the
electric system enabled us
to avoid a 4-5% electric rate
hike in 2013-2014

FASTER, BETTER — AND NOW, BIGGER

EPB Fiber Optics keeps growing. And thanks to funds that come to the electric system from our fiber customers, we were able to avoid a rate hike for electric power in 2014.

As with everything we do, we push for continual improvement in EPB Fiber Optics – faster speeds, more choices, and more fun for our customers. As our services grow, we are also growing a community of happy customers. And because our fiber system rents facilities from our electric system, part of every dollar helps offset the cost of power.

Maybe it's our reputation for smart, friendly, and responsive customer service. Maybe it's the fact that Chattanoogaans like supporting local companies, keeping jobs and dollars in town rather than farming them out to Philadelphia or New York. Surely, it's also the incredible speeds and clarity that are only available from EPB Fiber Optics.

Whatever the combination of reasons, our EPB Fiber Optics customer base gets bigger every year. This year, we signed up our 58,000th customer, plus 5,200 business customers. As this number grows, so do our offerings – faster speed, more options, new channels.

On the commercial side, one of our biggest growth drivers continues to be Hosted Phone Solutions, which allows small and mid-sized businesses to have an affordable yet sophisticated telephone system – with all of the bells and whistles that were once only available to large business enterprises. All without having to buy and maintain expensive equipment.

**MORE CHOICES, MORE FUN, MORE
CAPABILITIES TO OUR CUSTOMERS, AND
MORE BENEFIT TO OUR COMMUNITY.**

Not only is Chattanooga attracting new businesses in response to the incredible opportunities that our fiber network makes possible, but every dollar that goes to an EPB Fiber Optics bill helps hold down the costs of electric power.

In fiscal year 2013-2014, EPB Fiber Optics paid nearly \$24 million for access to the electric system's fiber network and shared services such as administration, legal, and human resources.

When revenue from the sales of communication services are added to reductions in outage duration and improved operational efficiencies, it is estimated that EPB Fiber Optics brings a payback of more than \$83 million, every year. More than \$50 million of that number is a direct benefit to businesses in our community – reducing outage duration means reducing downtime for businesses – whether that's manufacturers having to shut down operations, restaurants losing a valuable shift, or retailers whose cash registers can't ring.

The overall financial benefit that our fiber brought to our electric system in 2013-2014 meant that – despite the rising cost of, and demand for, energy – we were able to avoid a 4-5% rate hike. Making power more accessible for everyone who lives in our community.

In the photo: Terran Carlisle, Customer service team member, was instrumental in helping our residential and business sales grow.

SMARTER THAN THE AVERAGE SMART GRID

As “smart grids” pop up around the country, it is becoming more and more apparent just how different our Smart Grid truly is. The more we explore its potential, the more we discover its power.

Our Smart Grid is the only one of its kind – integrating fiber-optic communications with the electric system, across our entire service area. Collecting information from thousands of devices, adding up to 2.3 trillion data points collected every year.

With so much information now available, we need an incredible system to help us make this information useful for our operations and, ultimately, for our customers. But no such system existed, until we had one custom-built by Alcatel-Lucent and Bell Labs.

Our in-house engineers and technicians helped design this “Smart Grid Management System (SGMS),” and once it was built, we took it over. Integrated with our visualization tools and overseen by remarkable employees, the SGMS helps us make sense of data points coming in from all along the electric system. So we can offer more, and better, services to our customers.

This is smart technology, managed by smart people.

IMPROVING OUR ABILITY TO SERVE OUR COMMUNITY AS WELL AS TO SAFEGUARD ITS ASSETS.


In the photo: Kent Massey and Adam Needham (l to r), Corporate Technical Consultants, helped develop our SGMS and now play a major role in maximizing its potential.

Across the U.S., electricity theft adds up to nearly \$100 million annually, in energy costs. This is enough energy to power 77,000 homes for an entire year.

When people steal power, they are making their neighbors pay the bill. But they also often damage equipment and create a safety risk for themselves and the homes or businesses around them.

Our engineers have created algorithms that watch for irregularities associated with power theft, and when they see activity that appears to be questionable, they can flag accounts, suspend service, and in some cases where there is a repeat offender, the lawbreaker might be turned over to our Legal Division, who may press charges. Helping hold down costs for everyone, and reducing safety risks throughout our community.

The Smart Grid Management System interfaces with a number of our operational systems. In addition to helping us reduce losses due to theft, the system lets us know immediately when a service to a residence or business is out – and even when it is restored, confirming the success of our field work.



In the US, energy theft adds up to \$100 million. Enough to power 77,000 homes for a year.

2.3 trillion data points
collected annually



CSSAS IN THE HOUSE

Thanks to high speed connections, 15 EPB Customer Service and Sales Advisors now help resolve customer needs from the comfort of home.

A direct, high speed, reliable link from our downtown headquarters enables fifteen EPB Customer Service and Sales Advisors (CSSA's) to take calls from their homes. Resolving every day customers needs, or lending a hand in times of crisis.

What does the 21st century workplace look like? It just might come with high tech tools, an anytime/anywhere network connection... and bunny slippers?

For fifteen EPB CSSAs, the workplace of the future is present now, in their homes.

Like many customers throughout our service area, the advisors are connected to EPB Fi-Speed Internet, Fi TV video, and Fi Phone. But to help them do their jobs, they also have a dedicated and secure connection to our customer service systems, installed by our IT Department. So every incoming call receives the level of care, information, and attention that it deserves.

BRINGING THE BENEFIT OF OUR WORLD CLASS CUSTOMER SERVICE, IN EVERYDAY SITUATIONS AND IN TIMES OF CRISIS.

When a storm hits, power and communication lines are often a casualty of ice, high winds, and falling trees. And when lines go down, customers call in to EPB, to let us know.

Historically, during severe weather, supervisors would call in extra hands to handle the additional calls, so customer wait times would be as short as possible. Sometimes, it could take an hour for these extra employees to navigate the streets and arrive at their desks downtown.

Now, thanks to the work from home program, these CSSAs can become first responders, and start handling calls immediately.

So on an ordinary afternoon or in the dark of a storm, in hard hats or slippers, we're ready to help.

In the photo: Cassandra Robinson is one of EPB's 15 work-at-home agents.



BEST PRACTICES KEEP GETTING BETTER

When an electric circuit goes down, traditional best practices call for four remote attempts to check the equipment, before a crew is dispatched. Our Smart Grid offers a better way.

Lightning strikes. A tree falls on a power line. For years, best practices in power operations have called for four attempts to see if the interference has resolved itself, before sending a crew to make repairs.

When a problem occurs on the power system, equipment we call a switch opens to stop the flow of electricity. “Reclosing” is the process of automatically closing that device to restore the connection to determine if the line is clear. The purpose of Reclosing is to try to restore power to customers without the assistance of field teams.

But if the line is not clear, or equipment has been damaged, each reclosing attempt can produce noise and sparks that cause people in the vicinity of the circuit to worry, and can cause minor damage to the system, that has to be repaired later. In some cases, it can even cause other customers serviced from the same substation to experience dips in voltage, as the attempts are carried out.

The incredible network intelligence of our Smart Grid means that this is not necessary. With our power system comprised of nearly 1,500 switches that can sense problems and route around them, reclosing is no longer the only way to restore power without the use of field personnel. This allows us to use reclosing less and avoid all of its negative side effects. Instead, we allow our Smart Grid to perform switching based on data that minimizes impacts to customers and equipment.

In the photo: Brooke Hall, Engineering Assistant, changes the settings on the substation relays.

RATHER THAN SIMPLY TRY, AND TRY, AND TRY AGAIN, WE FIND THE QUICKEST PATH TO BRING THE LIGHTS BACK ON.

We still attempt reclosing, but only when it is most likely to be successful, using real time processing to determine when to open and close the switches.

Now, when power flickers during a thunderstorm, it might be because a smart recloser is testing the fault, and then – if necessary – routing around it, through other circuits, other switches.

Our top priority is preventing downtime for the homes and businesses surrounding a fault. Distribution automation performs the switching in about one second, rather than cycling through tests and a manual power lockout.

This rethink of reclosing, however, also brings other advantages. The voltage in other homes does not dip during repeated reclosing attempts, and our substations, transformers, and other equipment are spared strain on the system.

WASTE NOT, WANT NOT

Our energy efficiency services continue to add value for home and business owners throughout our service area – bringing greater efficiency and, in some cases, incentives to make improvements.

It might seem like an odd business objective, but the purpose of our audits and other energy services is to help people buy less energy from us! However, this objective fits beautifully with our mission – to help our community grow with comfort and productivity, as efficiently as possible.

The number of free energy audits, inspections and other energy efficiency-related services that we perform for our customers grew to over 4,100 this year. Always undertaken at the owner's request, these audits are in-depth inspections into the performance of a home, office, warehouse, manufacturing facility – any building that taps into our electric system.

To conduct a truly useful energy audit, our auditors are experts not only in energy efficiency, but also in construction, systems analysis, and environmental standards. Armed with this knowledge – and also with an array of tools including compressed air leak detectors and infrared thermal imaging scanners – they venture into crawlspaces and through attics, inspect manufacturing machines and HVAC systems, investigate weatherization measures, and more. All to make certain that everything is working as efficiently as possible.

OUR EXPERTS' RECOMMENDATIONS CAN REALLY ADD UP TO GREATER EFFICIENCY AND, IN SOME CASES, EVEN FINANCIAL INCENTIVES.

Residential customers can qualify for refunds up to \$500 from TVA, for EPB auditor-recommended improvements to their homes and more for commercial spaces. In 2013-2014 alone, we helped customers get \$2.8 million in such incentives from TVA.

Even for customers that do not apply for these refunds, making the recommended changes can help them get the maximum value for every kilowatt hour of energy. And today, energy efficiency is not only more important than ever – it is on our community's mind, more than ever.

Not only are energy costs on the rise, but this year, we hit an all time peak energy usage during the winter's polar vortex. Thanks to the Smart Grid, our system was more ready than ever to face the extremes of temperature, meeting demand and withstanding the falling trees, high winds, and car accidents that can cause outages. Thanks to our energy auditors, thousands of homes and businesses were ready, too.

In the photo: Ron Jones, Energy and Communications Technician, helps business customers increase energy efficiency, using tools like infrared scanning and compressed air leak detection.

\$2.8 million in TVA incentives to our customers.

Over 4,100 audits





WINDOWS OF OPPORTUNITY

In the street-level windows of our downtown building, giant video walls show and tell about the wonder of EPB Fiber Optics.

Bright lights, big screens. In the Broad and Market Street windows of our downtown buildings, integrated stacks of video monitors offer a peek behind the curtain, and the magic, of our communications services.

Last summer, folks around town might have been surprised to look up and see an eight-arm, eight-propeller “octocopter” hovering in the air. The remotely controlled mini-helicopter was equipped with a high definition Red Epic camera, and was shooting footage around the city.

Meanwhile, behind the scenes, our marketing team and creative partners were crafting messages about the benefits that EPB Fiber Optics brings to homes and businesses.

The video and messaging came together to share about the limitless opportunities that fiber helps make possible for our city.


TOLD IN VIDEOS LIGHTING UP THE BAYS OF OUR STREET-LEVEL WINDOWS, BOTH INSIDE AND OUT.

C Chattanooga citizens and visitors, passers-by and passing cars, can see the videos brought to life on stacks of video screens.

The screens were inspired by a field trip to Atlanta’s World of Coke, where the lobby is filled with video monitors. But in our windows, we wanted to create even larger-format screens by integrating flat screen monitors – the Broad Street video wall is made up of twenty-one 55-inch monitors; the Market Street wall uses twenty-seven 46-inch monitors.

Of course, in October the screens disappeared so we could honor our time-honored and much-loved tradition of decorating for the holidays! But after the last present was opened and the New Year’s countdown complete, the 17,000 pixel screens were back, to take viewers on a journey through the features and benefits of the city’s super powerful fiber optic network.

In the photo: Pam Baker, Communications Specialist, was project manager for the window display creation and installation.



415 videos created by area students

130+ hours of content

LIGHTS, CAMERA... ACADEMICS!

We teamed up with US Education TV and Hamilton County Schools to offer video created and produced by local students.

A partnership between EPB Fiber Optics, US Education TV, and 12 Hamilton County schools gives local students the skills, equipment, and opportunity to create and share original programming with their friends and family. Both online, and on TV.

Today's classrooms are not simply a place where students take notes and answer questions. Laptops, iPads, and interactive lesson plans have brought technology into the learning process like never before. And now, thanks to a program designed to help area students gain valuable experience in video production, a whole new set of skills is also on the table.

CityStream takes a hands-on approach to teaching, helping broadcast teachers and students in 12 area schools to learn and manage all aspects of creating, producing, and distributing video. From writing scripts and developing content to shooting and editing video, from incorporating graphic and web design to sharpening marketing and advertising skills – students learn to do it all.

The result? More than 415 videos were created in the 2013-2014 school year, adding up to 130 hours of content. News programs, morning announcements, reporter stories, broadcasts of sports events, and even graduation ceremonies.

In the photo: Students at Howard work on their video projects.

ALL ON CAMERA AND ALL AROUND TOWN.

As part of the CityStream program, we're providing an online platform for the students to share their content with family and friends.

Parents can't make it to a football game? Now they can see every tackle, every touchdown. School plays, award ceremonies, band recitals, news and updates, and more – it's all available on any computer, tablet, or handheld device with a web connection.

And if viewers are Fi TV subscribers, it's available on their television screens, too. EPB has provided a Fi TV Video on Demand channel for each partner school, with all of the students' content available at no charge.

Just one more way that EPB is helping build strong futures for students, and strong connections between schools and the community.

Signal Mountain High, Brainerd High, Red Bank High, Chattanooga Central High, Howard, Sequoyah High, Lookout Valley High, Soddy Daisy High, Orchard Knob Middle, Orchard Knob Elementary, Hixson High, and Center for Creative Arts

GOOD IN THE NEIGHBORHOOD

Our United Way campaign set new records, bringing in more employee donations than ever before, and bringing us together in the process.

Our annual United Way campaign broke new barriers, bringing in more employee donations than ever before – and bringing us together around the games, competitions, and contests that encourage us to pitch in and help.

This year we set our most ambitious goal ever, for our internal campaign to raise employee contributions to the United Way. We wanted to raise at least \$190,000.

Not only did we meet our goal, but we surpassed it by the widest margin in our company's history! 471 employees showed incredible generosity, raising \$32,000 more, for a total of \$222,000.

As always, this money goes to more than 47 agencies in our city, contributing to programs that strengthen families, assist people in need, and prepare children for school. Because most EPB employees both live and work in this community, the campaign is a chance for us to show our appreciation for, and support of, an institution that supports its own neighbors, friends, and family.

HELPING OTHERS AND HAVING FUN, WHILE DOING IT.

47 agencies receive support from the United Way

100% of United Way donations goes direct to agencies

It feels good to give! So why not have as much fun as possible? In keeping with our tradition, this year's pledge drive kicked off with employee meetings, games, and a string of "Minute to Win It" challenges.

We brought together all employees in the company and randomly selected people to participate in games, cheered on by crowds of their coworkers. Following the games, employees that we "loaned" to United Way shared their experiences from their campaign offices.

Speakers from supported agencies also shared their stories. Signal Centers talked about their work helping those with disabilities to reach lifelong independence, and Room in the Inn assists homeless women and children to become self-sufficient.

In the Photo: Krystle Fister, Human Resources Department, spearheaded the 2013/2014 United Way campaign.

471 employees contributed
to the campaign



A photograph of a young boy with light brown hair and a woman with glasses and brown hair, both smiling. They are standing in front of a brick wall that has been transformed into a mural gallery. The murals are colorful and depict various figures, including a person in a red suit and a person in a blue suit. The background shows a street with a blue sky and some buildings.

PAINTING THE TOWN

EPB buildings along McCallie Avenue became a blank canvas for a series of murals this year. The project turned the street into Chattanooga's first "drive-through" gallery.

Two EPB buildings on McCallie Avenue, part of our distribution and control center complex, were turned from brick walls into beautiful canvases over the past year. It's just the beginning of a neighborhood transformation project that we hope will stretch for years (and miles) into the future.

Chattanooga transplant Kevin Bate has painted large scale murals on the sides of buildings from the North Shore to MLK Boulevard, from Tremont Avenue to Track 29.

But when he first conceived of a grand scale, multiple-building art project, he saw McCallie Avenue as an amazing opportunity to give back to the community. Using public art to change perception of a neighborhood, showing that the arts truly are for everyone.

McCallie Avenue is perhaps best known as a high speed shortcut between downtown and East Brainerd; more than 13,000 cars drive past our buildings every year. We could see the potential of this project for enhancing the quality of life for the neighborhood, so we were delighted to offer our walls.

**BUT WE DID MORE THAN OFFER
BRICK CANVASES. WE ALSO OFFERED
HELPING HANDS.**

Our employees pitched in on creation of the murals, under the creative direction of the artists. We helped prep the walls, mix materials, and even do the actual painting.

This is a very different kind of community involvement for us, bringing together our engineering company with arts advocates including MakeWork, Arts Build, the UnFoundation, Causeway, and the Tennessee Arts Commission. R&B superstar Usher, a Chattanooga native, even posted about the project on his Twitter feed!

All in service of helping to beautify and transform a streetfront. We hope that now, as those thousands of cars pass the McCallie Walls Project, they will slow down, enjoy the view, and appreciate the neighborhood as never before.

In the photo: Marketing Specialist Rachel Troute brought her son Magnus to help artists paint the murals on our McCallie Avenue buildings.